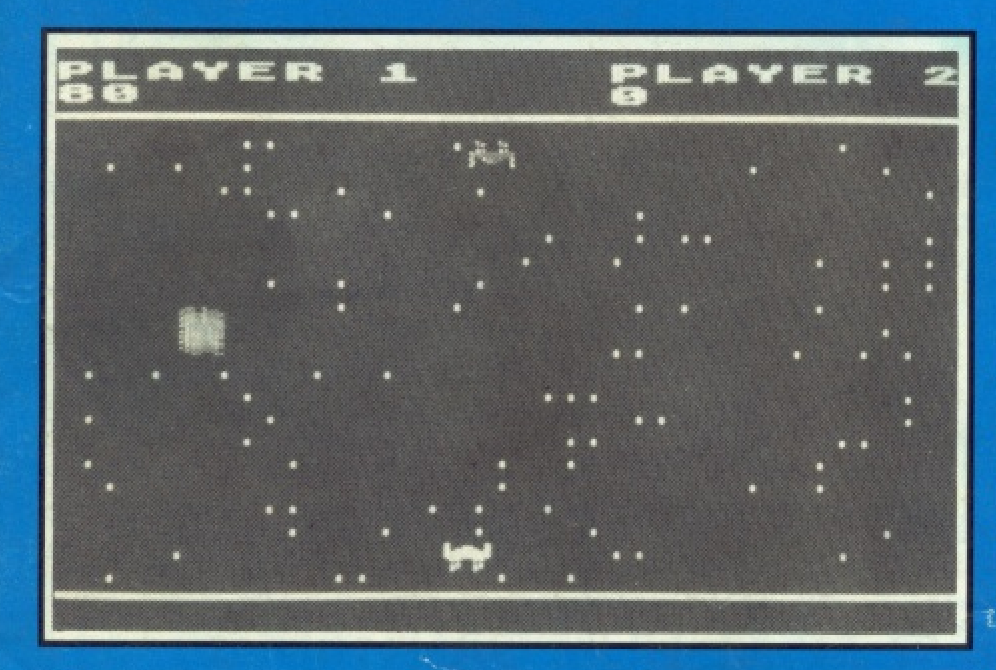
Page 6 Publishing's

NEW ATARI USER

The Resource for the ATARI CLASSIC and the ATARI ST

Issue 61 April/May £2.50



SLIME BLASTERS

A two player game that will also teach you how to program

FOR THE ATARI CLASSIC

TRANSDISK IV

Solving problems with very long games

KEYPRESS

Print your own chart of those graphics characters

FANCY A ROUND?

A look at the golf games available

SOME BASIC NOTES ... ON GRAPHICS

FOR THE ATARI ST

VIDEO MASTER

One of the first 'multimedia' programs on the ST

MAKING MUSIC

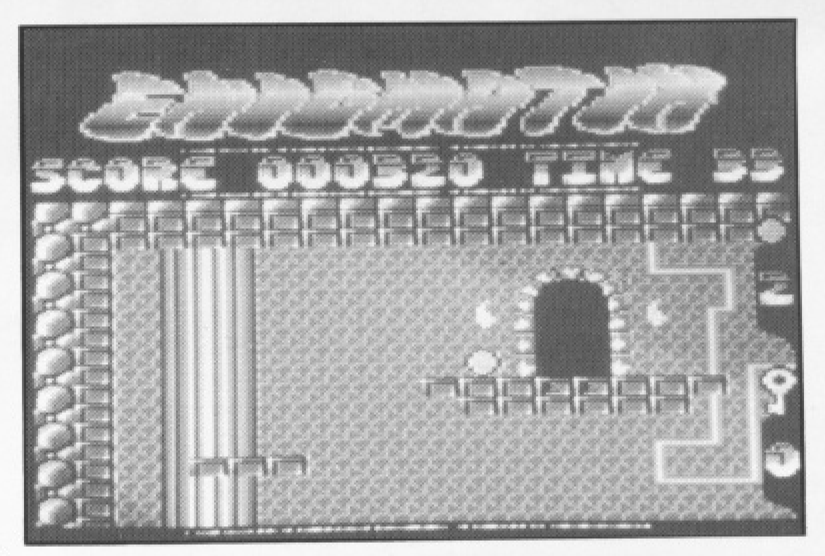
CD quality sampling with Replay 16



PLUS ... THE WORLD OF ST PD ... THE TIPSTER ... SIX NEW XL/XE GAMES REVIEWED ... MEGA MAGAZINE ....

BRAND NEW
XL/XE SOFTWARE FROM PAGE 6

ENIGMATIX!



A superb new arcade game which will prove a challenge to even the most seasoned player. Control the bounce of a ball to jump onto various platforms and find the exit, picking up points on the way. Sounds easy? What if some of the blocks disappear after the first bounce? What if some of the blocks are uni-directional bouncing you back the way you came? What if some blocks have to be used as lifts to reach inaccessible areas? Add to all that reverse control on some screens and 32 levels of increasing difficulty and you have a game that will challenge you to the limit. If you do manage to beat all 32 levels then the fun only just begins for there is a level editor to enable you to create whole new games of your own.



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- ★ ***One or two players***
- ★ ***Access to any level already completed after every 4 levels***
- ★ ***Level editor to design your own games***

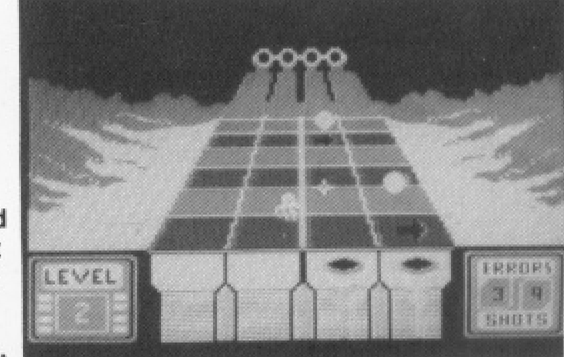
A BRAND NEW BRITISH GAME OF THE HIGHEST QUALITY

PAGE 6 is proud to be able to bring you these two superb new releases for the XL/XE. There are still a number of programs being released for the XL/XE but we have always been extremely selective so you can be sure that new programs from PAGE 6 are of the highest standard. ENIGMATIX is the first major program from a British programmer for some time and we are proud to make it available.

To order these products use the order form enclosed with this issue or telephone your order to us on 0785 213928. We accept Visa, MasterCard and Switch

A BRAND NEW XL/XE ROM CARTRIDGE! EXCLUSIVE TO PAGE 6!

HYPNOTIC LAND



Yes, believe it or not, we have tracked down a brand new ROM CARTRIDGE for the XL/XE from Lindasoft in Italy who have produced this in conjunction with Atari Italy.

HYPNOTIC LAND is a version of the massive ST hit KLAX - a highly addictive, highly entertaining game that will challenge you to complete the first few levels and have you coming back for more - again and again!

The aim in HYPNOTIC LAND is to redirect mineral elements in the form of coloured balls into the corresponding coloured cup at the end of a ramp. To do this you must place arrows on the ramp to redirect a ball into an adjacent column. Remember to only put green balls into the green cup and so on. It seems easy but once you have mastered the first level, some despicable monsters start to appear to try and steal the balls. You can shoot them with the joystick but don't forget you also have to keep one eye on the ramp! Sometimes special shining extra-balls will appear which can go in any cup and give bonus points.

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Like all the great classics a simple concept that has provided the foundation for a stunning and addictive computer game

HYPNOTIC LAND is on ROM CARTRIDGE and will run on all XL/XE machines

A BRAND NEW ROM for £12.95

'The magazine for the Dedicated Atari User'



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A disk containing all of the 8-bit programs from each issue of NEW ATARI USER is available either separately or on subcription. Single price £2.95 per disk, Subscription rates (6 issues)

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SUBMISSIONS

PAGE 6 welcomes and encourages its readers to submit, articles, programs and reviews for publication. Programs must be submitted on disk or cassette, articles should wherever possible be submitted as text files on disk. We seek to encourage your participation and do not have strict rules for submissions. If something interests you, write a program or article and submit it!

The next issue of NEW ATARI USER will be on sale 27th May
Editorial copy date is 19th April

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Issue 61 - April/May 1993

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PAGE 6 PUBLISHING's
NEW
ATARI
USER

Editorial

Issue 61
April/May 1993
'The Magazine for the Dedicated Atari User'
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THE CREDITS

All of the usual stuff is on page 3 but here are the people who made this issue possible.

Les Ellingham did all the usual work in preparing this issue and is constantly amazed by the level of support that Atari owners give with lots of good articles and programs in this issue and in the pipeline. At this rate the Atari 8-bit might outlast the ST!

Sandy looked after the general admin and various other things at the office including chasing the adverts and now also does the postman's job by taking all our mail to the sorting office (can you believe that Royal Mail charge £400 a year to collect the mail, and that is in addition to the postage!)

Paulette tended to most of the orders ensuring that the post is ready to go out before the traffic builds up (but she keeps saying it is cold, no resistance these youngsters!)

The Regular Contributors, who provide the backbone of the magazine and can generally be relied upon to come up with good articles and reviews, are ....

John S Davison	**John Davison jr**
John Sweeney	**Paul Rixon**
Damon Howarth	**Ian Finlayson**
Allan J. Palmer	**The Tipster**

All other contributors for this issue are individually credited alongside their articles or programs. Thanks to everybody for sharing their enthusiasm with other Atari users.

This issue only three CDs have accompanied the preparation and they will be worn out soon! Top of the list is REM who I have been a bit unsure of in the past. Their latest, Automatic For The People is, however, excellent containing much more slower and melodic tunes and sounding, on one track at least, like a 10,000 Maniacs clone. Next up is Joan Baez whose new album got some rave reviews in the music press but it is not much different to her past few albums. I guess that what has made it better is some good PR from the record company, journalists tend to be influenced by these things. The third one is, yet again, Neil Young, which has been played now for months on end. Must be good! There are several others that should have joined the list but CD's are now an unbelievable £13.99 each (for non chart stuff) and so I have to be selective. The biggest temptation at the moment is 10,000 Maniacs. Maybe next time?

The next issue of NEW ATARI USER could feature YOUR article or program, so SEND IT IN NOW!

PAGE 6 shows just what you can do with your Atari. NEW ATARI USER has always been created entirely with Atari equipment, initially on the XL but more lately with a Mega ST and other stuff, who needs PC's or Macs! With the exception of the final output on a Linotron and the use of an in-house repro camera for the photos and listings everything is done on the ST. Hardware includes a Mega ST2 (upgraded to 4Mb), SM125 Monitor, Supra 30Mb Hard Disk, an Atari Laser Printer, Citizen 124D printer, Philips CM8833 monitor, 130XE, XF551 disk drive, 810 disk drive, 850 interface, NEC 8023 printer. Principal software used is Protext and Fleet Street Publisher 3.0. Other software includes Kermit, TariTalk, Turbo Basic and various custom written programs on the XL/XE. Articles and programs submitted on XL/XE disks are subjected to various custom written programs before being transferred across to the ST via TARITALK. All major editing is done with Protext and pages are laid out with Fleet Street Publisher. A disk with the finished pages as Postscript files is sent to a typesetting bureau to be output on a Linotron and, hey presto, finished pages are sent back exactly as you see them. It really does work! All that is left is to drop in the listings and photos.
Well, it's not quite as easy as that but you get the idea!

Every long term Atari 8-bit owner will know that very little new software is being produced for their machine. That's only to be expected for a machine whose manufacturer gave up the ghost long ago but what is, perhaps, more surprising is how quickly the same sort of situation is developing with the ST. This issue we have, probably, the smallest ST coverage we have ever had and this is because the steady torrent of review software of the past has now become just a trickle with more and more of the major publishers ignoring the ST in their future plans.

Looking through the software release schedules in the computer trade magazine CTW reveals that almost all the new releases are for the PC or the Amiga and this is confirmed by the press packs given out by the major software publishers. Looking through most of them will reveal only, perhaps, one new release due on the ST this year, whilst dozens are scheduled for the PC. One of the effects of this lack of interest in the ST is that the major advances in software design are now concentrated on other machines and what new releases there are are overshadowed by the quality of product elsewhere. This is particularly prevalent in the realm of role playing games and adventures which have progressed steadily on the PC and all but disappeared on the ST.

In the computer software industry it is impossible to forecast what will be the next phenomenon because the industry has only been around a dozen or so years. The big thing at the moment is, of course, the games consoles where addicted youngsters are willing to pay between £40 and £70 for a single game. Do prices such as these ring any bells? Who would have believed that the computer world would come full circle with the 1990's equivalents of the Atari 2600 dominating sales and software production?

What is sad about the current console dominated market is that many of the games for the Sega and Nintendo at £40 upwards are no more playable than dozens of similar games on the Atari XL/XE. Why is it though that the majority of users of the best home computer ever made would not dream of paying these prices for software? It is hard enough to sell a new game priced at under £10!

Still the fad may not last and the consoles may go the same way as those early games only machines when users find that all they can do for something new is fork out another 50 quid! With an Atari XL/XE, on the other hand, you can come up with dozens of other uses, even write your own software for nothing. Maybe that's why the 8-bit lives on and why those who abandon the 8-bit world seem to suffer withdrawal symptoms. You would be surprised at the number of phone calls we get from folks who want to replace 8-bit equipment they sold a year or two ago!

Stay with it, folks, there's more life in the old Atari than you might imagine!

Les Ellingham

RAILROAD TYCOON WINNERS

The winner of our competition last issue for a copy of Microprose's RAILROAD TYCOON was S. Garner of Derbyshire. Microprose also kindly donated a T-shirt for the runner up and this was won by B. Walker of Bradford

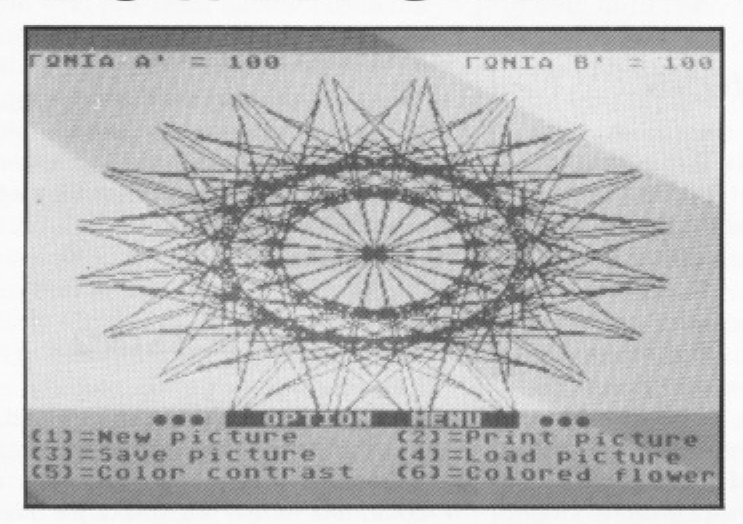
Coming Next Issue ...

CROOKED HOUSE - a new game from Bill Halsall

MULTILOAD - a neat way of autobooting your disks

DISK BONUS

FLOWER GARDEN



by Anastasios Bonidis

Flower Garden is a simple to use program that creates many beautiful symmetric designs for you to save or print out. All that is required is for you to enter two simple parameters and the program will begin to design a picture based on these. You can stop the drawing at any point or allow the program to plot all available points.

In order to speed up the drawing process the program uses a translator which speeds up the maths process. When you boot the Bonus side of this issue's disk you will be presented with an XL/XE to 400/800 translator. Use the SELECT key to change the floating point routine to 'fast' and then press START which will load and run the program.

Initially you will be asked to enter two parameters. Simply enter any number you wish between 1 and 360 and watch the program create its first drawing. You may either wait until this drawing is completed or press the OPTION key whereupon you will be presented with a menu of choices.

Option 1 allows you to enter another two co-ordinates to begin a new drawing.

Option 2 allows you to print the design on screen on a 1029 printer in a choice of four different styles.

Option 3 saves your design to disk in vertical compressed Atari Touch Tablet (and Koala Pad) format.

Option 4 gives you the opportunity to load pre-drawn screens from disk. Drives 1 and 8 (ramdisk) are supported in both load and save options. There are a number of saved screens already on the disk.

Option 5 changes the colour contrast on screen so that you can choose the most effective colours for your design.

Option 6 animates the design by cycling colour registers and also plays one of three available Christmas tunes.

Anyone can have fun with Flower Garden but programmers may also find some of the routines used of interest. The program is written in Basic and so can be listed and sections of the program modified or 'lifted' for different applications. Routines of interest may be the vertical compression saving routine (lines 93 to 101), vertical compression loading routine (line 101 and 86 to 92), moving border routine (lines 80, 102, 110 and 111), the multi coloured Graphics 0 and 8 routines (lines 111 and 114), the 'indirect' Graphics 15 command at line 63 (especially useful for 400/800 owners since Graphics 15 is not directly supported by these machines) and the Graphics 8 screen dump routine (lines 112 and 121 to 141) which cam be modified to suit other printers.

Thanks and acknowledgements for many routines and ideas go to Jeff Bader's excellent book Basic Turbocharger, to ANTIC magazine and various PAGE 6 library disks.

Flower Garden is the bonus on this issue's disk which also contains all of the other programs from this issue ready to run. There are also occasionally extra bonus programs on these disks. Disk subscribers will receive their disk with the magazine but others can purchase the disk separately for £2.95 by writing to PAGE 6, P.O. Box 54, Stafford, ST16 1DR. Telephone orders using your credit card can be accepted on 0785 213928.

Mailbag

Allan J Palmer sits in the hot seat at the sorting office awaiting your letters on all things Atari - get writing!

Send your letters to
MAILBAG
Page 6 Publishing
P.O. Box 54
STAFFORD
ST16 1DR

Welcome to my second Mailbag column. The trickle of new letters has begun to grow, but I look forward to more arriving and plenty of feedback on those published. In the meantime, here's another selection from the Page 6 sorting office ...

Allan Palmer, Mailbag Editor

CONGRATULATIONS

With PAGE 6 reaching its Tenth Anniversary, the most recent batch of mail has included a number of congratulatory messages, including this from Leslie Benson of Hythe, Kent:

"At Bingley Hall I was lucky enough to obtain copies of the first twelve issues and can appreciate the gradual advance, not only in quality but also in the knowledge and experience of all concerned. Way back in 1983 I had never heard of Atari and it was several years later that I obtained my first 600XL and became acquainted with PAGE 6. Since then I have looked forward to the new issue every two months."

HARDWARE ADVICE WANTED

Congratulations were also included in a letter from Mr. F Fry of London SE23:

"I am writing to let you know how much I enjoy your magazine which I have been reading since issue 44 (June/July 1990). In May of 1990 I was given a defunct 65XE which was about to be cast out as scrap so I rescued it to attempt to salvage it."

After cleaning and reassembling the juice-stained and biscuit crumb covered console, Mr. Fry found himself with a working Atari 65XE and then realised he needed additional hardware and software to create a fully usable system. Like many others, he discovered that the Atari Classic is not a machine with support in any high street or even specialist shop. Then he found New Atari User.

"...and was agreeably surprised to find a number of adverts for the support of the 8-bit scene. My setup now consists of 65XE computer, XC12 recorder, 1050 disk drive and 1027 printer. I am still only a novice at the computing game and still need lots of help as I propose to purchase a colour monitor and another printer in the near future. I wonder if some kind reader who just happens to be a hardware genius would like to write an article for the mag suggesting suitable monitors and printers to extend my existing system - a brief explanation of the terms ANALOG RGB, EGA/CGA, VGA as used in reference to monitors would be appreciated."

An article on printers has already appeared - I suggest you see if Page 6 still have copies of issue 33 which included a comprehensive feature on 'The Printer Jungle'. If you refer to issue 48, you'll find a review of the Citizen 120D printer. When it comes to monitors that's another story which doesn't seem to have been explored in print to any great extent, so this issue's first challenge to readers is - what monitors do you use/recommend for an Atari Classic system?

WORD PROCESSING

The article about printers mentioned above should also help Diane Heyes of Bury, Lancs who wrote:

"I would like to use my 800XL for word processing. I have AtariWriter Plus software and an old broken 1027 printer. What I am wondering is whether there are any printers available to buy new? Would it be a good idea to buy new word processing software if the printer is quite advanced?"

Just to highlight the main points to consider - any new non-Atari printer will require an interface to connect it to your Atari computer. The interface that seems most available at the moment is the MicroPrint Interface from Gralin International or Derek Fern. AtariWriter Plus, by all reports, is a comprehensive package which includes a custom printer driver create facility so you should find no need to consider a new word processor.

USER GROUPS

It's a pity that there don't appear to more local Atari User Groups - in their heyday these were great places for answering the sort of questions posed by Mr. Fry and Diane above. Maybe there are more Atari User Groups than we think? M Lathbury of 18 Beechwood Crescent, Amington, Tamworth, Staffs B77 3JH advises that:

"I am currently putting together a list of any 8-bit User Groups in Britain or elsewhere for that matter, and would like it very much if any User Group reading this would send me information concerning where their group is based, the name of the group, the address to write to for more information, whether they have a PD library, etc. So if there are any User Groups out there please, please, please reply and help keep the Atari Classic alive!"

It's been a while since NAU included a User Group list. Best of luck with this project, and in the meantime, have you contacted NoSAUG (see issue 59) or TWAUG (see issue 60)? If you have any success, don't keep the information to yourself - publicise it!

LOAD FAILURES

A local User Group would be an ideal place to help Richard Millan of Hawick, Scotland who has been having problems with some commercial games:

"I have an Atari 65XE Games system. When I first got it, I bought 'Ninja', 'Spellbound', 'KikStart', 'One Man & His Droid' and 'Domain of the Undead'. They won't load! All my other games do. Can you help me?"

Unfortunately, it's difficult to diagnose a problem that is only described as "they won't load" - if you have a problem, it's helpful to describe the circumstances as fully as possible. Have you disabled BASIC by holding down the Option key while loading the game? Have the tapes been rewound too far leaving too much leader before the game loading point? Which games do load on your system? Is there someone out there who would like to write a piece on game loading problems and their cure?

WHO DARES?

From the land of 'Neighbours' and 'Home & Away', John Stecyk writes from Victoria, Australia about another game problem - this time the problem is unavailability:

"I am a fan of the 8-bit Atari and Doctor Who. I have read in the Australian Doctor Who fan club newsletter about a new computer game called "Dalek Attack" produced by Alternative Software. Apparently "Dalek Attack" is being released for IBM, C64, Spectrum, Amstrad and Amiga. The 16-bit version costs £16.99 and the 8-bit version £7.99. No mention is made if a version for the Atari Classic is planned for release. As Alternative Software have supported Atari 8-bit in the past, I urge everyone interested in this software to write to them promising to purchase a copy."

Is this the same Alternative Software who announced a 'Postman Pat' (another BBC star) game for the Atari Classic (see issues 35 & 44)? Did that game ever materialise? To be honest, I doubt very much that any software house in the UK will convert a game to the Atari Classic. Our best hope is a clone from one of the European software producers like Ke-Soft. In a way, the Atari Classic is a bit like the good Doctor who hasn't had any new television episodes for quite a while now ... I hope you enjoyed 'The Complete Doctor Who' disk 178 in the Page 6 PD Library.

ALL AT C ?

So far, I've managed some sort of link between the letters in this column; now how do I link the previous letter with this one? Ah yes, the Seventh Doctor had a companion named Ace, and the subject of this next letter is 'Ace C' ... John Young of Banbury, Oxon has this complaint:

"The Public Domain C compiler 'Ace C' was reviewed in the April/May 1992 issue of New Atari User, and as a slightly frustrated user of 'Deep Blue C', and on the basis of the article, I bought 'Ace C' from Page 6's PD Library. Upon casual scrutiny, the compiler appears to work, compiling the sample programs successfully, much faster than 'Deep Blue C' would. However, whenever I try to compile any of my programs (which worked fine with DBC), the compiler crashes, despite all the required changes specified in the documentation having been made. Even the famous 'Hello world!' program causes a crash. A further, although slightly more forgivable, bug is that when run under a modified DOS 2.5, the compiler locks up without even prompting for a filename.

Unless I have a corrupted copy, the program does not work, and I would recommend that no-one has anything to do with it. I think my experience shows that Mr. Blake, the author of the review, did not attempt to write a program with 'Ace C' but at most played with the sample, getting most of the material for the piece from the supplied documentation. It is also worrying how such obviously untested material got into general distribution."

This is something that I would like some feedback on. 'Ace C' is not a new product - it features in other PD Libraries worldwide. So, does it work or not? Are there some other Atari Classic C programmers out there who can give us more information?

"GOOD OLD INDEX. YOU CAN'T BEAT IT."

(Sherlock Holmes - 'The Sussex Vampire')

Another complaint, but not so drastic, comes from a reader in London SW17 who wishes to remain anonymous:

"I managed to get myself a daisy-wheel printer and enjoyed connecting it up to the 8-bit. I have the 850 interface, so no problem using a lead from that, but a longer lead was needed to site the printer. I remember reading an article in New Atari User mentioning the configurations of the lead so you could make your own. Could I find this article in the contents pages of the magazine ... no way!

I also subscribe to a number of other magazines. At the end of each year (or volume), they seem to publish an index of the contents. How about it Page 6?

I must add that it gave me the opportunity to re-read some articles while searching for the information, so I mustn't grumble too much ..."

Back in 1985, reader Peter de Bode compiled an index to issues 1 - 12, which Les made available for a SAE, I think. However, issues 13 on seem to have gone unindexed. This seems like another good challenge to New Atari User readers - has anyone compiled their own Page 6/NAU index? If you have or plan to, (perhaps using a database like 'Home Filing Manager', 'Diskbase', 'Data-X', 'EasyFind' or other programs), why not submit it for inclusion in the magazine or on disk?

In case our correspondent didn't find it, or someone else is looking for it, the article in question appeared in issue 55 (page 19) - and it was inadvertently omitted from the Contents page.

SPARTADOS

An index to the magazine would make my life easier to answer questions like the following from Denise Ward of Torbay - that's Torbay in Auckland, New Zealand, which must be the furthest point from Stafford that an Atari Classic and New Atari User magazine can be found:

"Could you please inform me whether there have been any articles written on SpartaDos before issue 53, as that's when I discovered New Atari User. If not are there likely to be any in the near future?"

The only SpartaDos related articles I could find are: SpartaDos Construction Set/U.S. Doubler review (issue 32) and SpartaDos X review (issue 37). You could also check the PD Library for the 9 SpartaDos Utility disks. I'll leave it to the Editor to let us know if any articles are planned for the future - is this a subject that others would like to see covered in more detail? Any volunteers to write an article?

HOW DO YOU USE AN UPGRADE?

Denise also mentioned her fellow Kiwi, Bob Reynolds in her letter, and two days later, the following arrived from Bob Reynolds from 6 Fitzwilliam Drive, Torbay, Auckland, New Zealand:

"I recently installed the XE320K upgrade by Scott Peterson from Page 6 PD disk DS55, and the completed unit seems to be the same as before. The only anomaly is that PRINT FRE(0) reads 36338, and I cannot find any way of recognising the extra RAM to see if it works. Any help would be appreciated."

I think if you revisit the documentation files on disk DS55 you'll find information about accessing the extra memory - try looking at the file describing the 800XL 256K upgrade, the principle of extra banks of memory remains the same on both the upgraded XL and XE machines. The whole 320K is not available in one piece - beyond the 'standard' 64K, the extra memory is

Mailbag

switched in and out in 16K banks. In fact, David Manlove's articles on Bank Switching in NAU issues 59 and 60 may also point you in the right direction. The best article on the subject is probably Tim Patrick's 'SmartRAM 2.5' in the September 1989 issue of ANTIC (vol. 8/no 5) - this describes and provides a program that provides a super RAMdisk, no matter what memory upgrade is installed. How about some input from anyone else who has upgraded their Atari Classic giving us a tutorial on how you can use this extra memory for multiple large RAMdisks and the like?

HUNT THE PROGRAM

From Belgium, Freddy van den Heijning enquires about a particular program:

"I want to ask if somebody can tell me more about the program MANAGER-3003. I think it was written by a Dutchman."

When I first pulled your letter out of the sack, I hadn't heard of this program - but shortly afterwards I received a copy of issue 4 of FUTURA disk magazine (£1.95 from Stuart Murray, NoSAUG, 71 Walker Road, Tôrry, Aberdeen AB1 3DL, Scotland) that disk includes MANAGER-3003 which is described as " ... a very powerful database program which allows alphabetical storage." Print options are available for Epson compatible printers. If you have an Atari 1029 printer, FUTURA issue 4 also contains a utility to print MANAGER-3003 lists on that printer.

Freddy is also looking for fellow Atarians on the Continent:

"I would like to know if there is a User Group in Belgium or the Netherlands. If there is not, I would ask users from Belgium or the Netherlands to write me if they are interested in starting one."

Freddy's address is : Veldstraat 13a, 2381 Weelde, Belgium.

Lastly, Freddy requested some help in beginning machine code programming. Hopefully, Daniel Lea's 'First Steps' series which began in issue 57 is providing you with a good starting point, Freddy.

XE MIDI MUSIC

Syd Beauchamp from Crawley, West Sussex thanks Les and his Team for an excellent magazine and then adds a few notes (sorry, unintended pun!) about the Classic's musical capabilities:

"I like music - although I cannot read off the stave and play at the same time. It's fun to experiment using the 130XE in conjunction with MidiMaster and a Casio CZ1 synth. It may be of interest to other readers that Page 6 PD disk 'Music of America' files work with MidiMaster using 'APLAY'. This may already be a known fact but I can't recall seeing it published in New Atari User. Using the Casio, which is a multitimbral synth and selecting 'BRASS' it sounds quite effective - some play better than others, but the march, 'Washington Post', seems to be the best. I have all the other music file disks in the Page 6 Library - some work better than others. As these were designed for the POKEY sound chip built into the Atari Classic, it is to be expected that some do not work very well with MidiMaster."

Thanks for the information, Syd. The Atari Classic music scene was briefly touched on in the early instalments of John S Davidson's articles. Would anyone like to contribute more on what can be done with Midi and synthesizers or the 8-bits?

FROM XE TO ST

Den Baverstock of Brighton, East Sussex, has had problems in porting word processor text files from his Atari Classic to his ST:

"Perhaps someone could help me with a slight problem that I have with the transfer of my TextPro files to my STE. Having made up a Null Modem cable with the following connections:-

STE		*850*
pin 2	*to*	*pin 4*
pin 3	*to*	*pin 3*
pin 4	*to*	*pin 8*
pin 5	*to*	*pin 7*
pin 7	*to*	*pin 5*
pin 20	*to*	*pins1,6*

I find that using DTerm on the 130XE and UniTerm on the STE transfer will only take place from the STE which is not much use. The fact that my two computer set ups are on opposite sides of the room means that I have to use a long lead (3 metres) - obviously not a standard length. I would very much like to obtain a communication program like UniTerm for the 130XE which has the provision for toggling autoprint (f8). Does Kermit have this function?"

We've also had correspondence from Daniel Baverstock (Den's son) who has inherited the 130XE from his dad judging by the letter. Daniel is hopeful that the support for the Atari Classic that is strong on the Continent, as described by Derek Fern in his review of 'Dusseldorf '92' in issue 58, spills over into the UK. Perhaps with the 'Single European Market' of 1993, this could become more of a reality? Daniel is one of the many frustrated Atarians who wonders why many games on the C64 or other 8-bits weren't converted to the Atari Classic utilising its full capabilities.



HALL OF FAME

Tom Ralphs of Leigh, Lancashire has an interesting suggestion for all games writers:

"There is one thing that I would like to encourage, and that is for all programmers who submit games to New Atari User (and to other magazines and PD outlets) to write a Hall of Fame routine which saves high scores to disk. I believe that all games should save at least the top ten high scores to disk and I have determined that I am not going to buy any more that do not do this. Also I think that your game reviewers should give us this information when they review games. You have published many games, particularly by Bill Halsall which would have been greatly improved and would have been more addictive with a high score save. I have done this myself with the BASIC games you have published, but I cannot program in machine code so I am unable to add a high score save to these games."

I agree with your view that the addition of a Hall of Fame feature does make games more addictive - giving you a record of what score to aim for on the next occasion you boot the program. However, there are many excellent games which you will deprive yourself of if you restrict yourself to only those with that facility. You say you've modified BASIC games to accommodate this feature - have you developed a generic routine to accomplish this? Is it something you could contribute to the pages of New Atari User? Perhaps someone else will provide a similar routine for incorporating in machine code games? Naturally any routine should cater for cassette users who would not have a 'save to disk' facility ...

Thanks for your thoughts Tom, what do others think?

SUPPORT YOUR LOCAL SOFTWARE HOUSE

Paul Harley from High Wycombe, Bucks, is another games player who has these observations:

"I recently wrote to Zeppelin Games congratulating them for their Atari 8-bit games and asking about new releases. Unfortunately, they informed me that if the market for the Atari 8-bit did not pick up then they would not be producing any more software for the Atari. They stated that the sales for the 8-bit are less than the actual cost of writing and producing the game. On this sad note, I urge people to buy Zeppelin's existing games and to show support for any new releases."

What more is there to say?

TAPES TO DISK

Another keen gameplayer is Martin Beswick from Leeds:
"I have been an Atari owner for over nine years, but have only had my interest rekindled since discovering mail order, (superb idea, but heavy on the Visa card) but I can't hold my frustration at the number of apparently great British games available, but only on tape. It makes me cringe every time I open a copy of New Atari User and see loads of games (including a few old American ones) that are untouchable for disk drive owning me. Is it not possible that Mastertronic and other budget companies convert several of these game to disk, even if to be sold through mail order dealers? After all, who could complain about spending £4 to £5 for a particularly good commercial game on disk?"
Has anybody had any correspondence with Mastertronic or other companies on this subject? Are there any particularly reasons why there aren't budget disk releases? Is the main problem the relative flimsiness of such a product? In the meantime, have you considered purchasing the 'Transdisk IV' utility from the Page 6 Accessory Shop? - OK, you'll need a cassette recorder as well, but ... ? If you have a cassette recorder, another venue to consider is the range of 'Turbo-load' high speed tapes available from Derek Fern's Micro-Discount.

DISKS AND DOS

The mention of 'TransDisk' above leads on to this letter from C Andrews of London, WC2:
"Is there a utility that enables you to convert 'TransDisk' .OBJ files to (standard) DOS .OBJ files? Also is there a utility that enables you to convert from 'TransPac' Boot discs to binary (DOS) files?
Did you know that if you are using DOS 2.5 or any other Enhanced Density DOS, when using options C (Copy File) or O (Duplicate File), if you are copying or duplicating files that go beyond sector 707 you will notice either an error message or the <...> characters on either side of the file(s) in excess of sector 707. I understand Atari wanted compatibility with DOS 2.0, but surely they could have come up with a fix?"
Has anybody had experience of the sort of utility Mr. Andrews is enquiring about? A possible program MAY be 'FILE2DOS' found on 'FUTURA' Disk 3 from Stuart Murray of the North of Scotland Atari User Group (NoSAUG - 71 Walker Road, Torry, Aberdeen AB1 3DL, Scotland) or from the Page 6 PD Library. Can anyone confirm this?
I'm afraid I don't understand what point you're trying to make about DOS 2.5 - Atari (and Bill Wilkinson) made DOS 2.5 as compatible as possible with DOS 2.0. A DOS 2.0 formatted disk just can't hold as much information as one formatted with DOS 2.5, so the '<' and '>' characters are used to show those files on a DOS 2.5 disk that won't be seen if using DOS 2.0.

AM I DENSE ABOUT DENSITIES?

While on the subject of DOS 2.5, a letter from Robert Francis of Neath, West Glamorgan asks for some clarification:
"I'm confused! In the advert for EXCEL disk magazine, some of the disks require a double density drive. Are all 1050's double density? If not, how will I know if my 1050 is double density? The 'BIG Demo' works on my 1050 - does this mean my drive is double density?
Do any of the British companies (e.g. Atlantis, Alternative Software, Zeppelin ...) still produce 8-bit games? It is a shame that Atari does not re-release the 130XE. If the Spectrum can be a success, the 130XE at a cheap price should do well!"
The subject of disk densities has cropped up recently. Dean Garraghty (62 Thomson Avenue, Balby, Doncaster DN4 0NU) noted on issue 8 of his 'Atari News-Disk' that he had *"...recently received a 7 1/2 page complaint about this subject. The whole argument is over my descriptions in the PD catalogue. I categorise disks as SD and DD. I say SD works on any drive, but DD needs a 1050. But, DD is sometimes used to describe true DD disks (180K format) which is used by US doubler and Happy. The standard 1050 density is often referred to as enhanced density or medium density. If I stick to two simple formats: single and double, we can avoid confusion."* Dean notes that in his PD library *"... I only have 2 disks which need a Happy/US doubler 1050 to run, and those disks say that in the catalogue. Most PD comes on SD disks anyway. Very very few PD disks (or any other disks for that matter) need a modified 1050 to run."*
I agree with Dean's view - most Atari software (commercial and PD) has to be compatible with the vast majority of drives and therefore must use the standard format of an 810 or 1050, so in the Atari Classic world there are only two standard formats: Single (SD) and Dual (DD). The relatively few pieces of software that use 180K formatted disks should be described specifically as such. I've looked back at EXCEL's adverts in NAU and couldn't find any that mentioned "double density" - they either refer to "enhanced density" or 1050 format. All standard 1050s are capable of reading disks in the enhanced format produced by DOS 2.5 - 40 tracks of 26 128-byte sectors, but only 1023 sectors available to DOS. When Atari introduced the 1050 they soon realised they needed to maintain compatibility with the 810 and DOS 2.0, so DOS 2.5 was born. Part of the problem seems to be Atari's use of more than one description for the format produced by DOS 2.5 - in the manual issued with the XF551 disk drive, they refer to both 'enhanced density' and to 'dual density' (page 141).

NETWORK THE 8-BIT?

Arthur Morris from Lampeter, Dyfed has an interesting question which one of our hardware experts may be able to shed some light on ...
"I am currently using (and have done so for several year now) an Atari 130XE and 1050 drive and find that (usually) they suit the work I ask of them very well - mostly word processing with a Panasonic KXP1081 printer. I also own a 800XL and a 800 machine and have been wondering if it is possible to have more than one machine connected to the disk drive, TV and printer. It would be very convenient to me to have a WP program and a spreadsheet running at the same time in different machines with the ability to switch between them without unplugging one machine and making a physical connection with the other. Is it also possible to transfer data for storage in the other machine - or is this asking too much?"
Arthur also notes that he has enjoyed reading our magazine since issue 4 of Page 6 and his teenage son is now an avid reader.
Well, I'm a bit out of my depth when it comes to these esoteric hardware questions, so I'm hoping that we'll get a few letters on the possibilities of networking a group of Atari 8-bits. Something should be achievable - wasn't there at least one U.S. Atari Bulletin Board that ran with a number of 800s linked to a shared printer and hard disk ...? When it comes to transferring data between machines, can a communications program like Kermit be used with an appropriate interface/cable between the computers?

Well, that's it for another issue. Don't forget that Mailbag is only as interesting as your letters, so let's have some answers to the problems posed this issue together with some new topics and comment. I intend to make Mailbag and interactive column so that means you need to join in. I am waiting for your letter!

Write to MAILBAG at Page 6 Publishing, P.O. Box 54, Stafford, ST16 1DR

KEYPRESS

A Reference Guide to Atari's Special Characters

by Peter Kirton

Occasionally, letters appear in "Mailbag" requesting a listing of the keypresses used to generate the Atari special graphics characters. How many of us have problems finding that issue of their favourite magazine which provided a table of these characters? A separate list on a sheet of paper which could be kept handy to the computer would tend to solve this problem. To this end, I decided to write a short program to list such a table on any printer, showing the graphics character, its keypress combination and the decimal equivalent of the character.

The program does not have any fancy frills. To maintain compatibility with most (if not all) printers, I have kept to single density bit image graphics (ESCAPE K). All text prints in default font and pitch settings as many printers use non-Epson standard codes to change these. However, the final output is a neat table which will be a handy reference to help in typing many magazine listings. The DATA statements may also come in handy as they construct the actual Atari special character set.

Type in the program and save it on a disk which is kept in an accessible spot. When the program is RUN, you will be reminded to turn the printer on before proceeding. Press any key and, in a minute, your list will be complete. If you lose it (or make my mistake and put it away somewhere safe - never to be seen again) simply print out another one. Now you can spend more time typing with less time wasted by searching through back issues for those lost codes.

```
WO 1 REM ******************************
CQ 2 REM ** ATARI SPECIAL CHARACTERS **
IM 3 REM **      PRINTER LISTING     **
QS 4 REM **      by Peter Kirton     **
PS 5 REM **                          **
BX 6 REM **      NEW ATARI USER      **
WU 7 REM ******************************
EZ 8 REM * NEW ATARI USER - APR 1993  *
WW 9 REM ******************************
NM 10 DIM GRAPH$(4),CHAR1$(8),CHAR2$(8),K
   EYS1$(20),KEYS2$(20),DEC1$(3),DEC2$(3)
IO 15 DIM PAD$(20),BLANK$(20):BLANK$="
                    ":REM 20 SPACES
GQ 20 OPEN #1,4,0,"K:":GET #1,A:CLOSE #1
NM 30 RESTORE 35:FOR I=1 TO 4:READ A:GRAP
   H$(I,I)=CHR$(A):NEXT I
QW 35 DATA 27,75,8,0
RV 40 ? CHR$(125):POKE 752,1:POSITION 11,
   9:? "Ready the printer":POSITION 11,11
   :? "Press any key..."
PA 42 POKE 764,255
TZ 43 IF PEEK(764)=255 THEN 43
PE 44 POKE 764,255
EN 45 ? CHR$(125):POSITION 13,9:? "Printi
   ng...."
RF 50 LPRINT :LPRINT :LPRINT :LPRINT
LW 55 LPRINT "                      KEYSTR
   OKES for ATARI GRAPHICS CHARACTERS":LP
   RINT :LPRINT
DL 60 LPRINT :LPRINT "                 NOR
   MAL VIDEO                            IN
   VERSE VIDEO":LPRINT
XK 70 LPRINT "       For     Type
      Decimal        For     Type
      Decimal"
SG 75 LPRINT "       This    This
      Value          This    This
      Value"
YH 80 LPRINT
VX 100 FIRST=0:LAST=26:SET=1
MX 110 FOR LOOP=FIRST TO LAST
UV 120   RESTORE 1000+LOOP
YR 130   FOR I=1 TO 8:READ A:CHAR1$(I,I)=
   CHR$(A):NEXT I:READ KEYS1$,DEC1$
XL 135   IF KEYS1$="COMMA1" THEN KEYS1$="
   CTRL ,"
XC 140   PAD$=BLANK$(1,(LEN(BLANK$)-LEN(K
   EYS1$))):KEYS1$(LEN(KEYS1$)+1)=PAD$
VQ 150   RESTORE 2000+LOOP
FE 160   FOR I=1 TO 8:READ A:CHAR2$(I,I)=
   CHR$(A):NEXT I:READ KEYS2$,DEC2$
NS 165   IF KEYS2$="COMMA2" THEN KEYS2$="
   INV CTRL ,"
DJ 170   PAD$=BLANK$(1,(LEN(BLANK$)-LEN(K
   EYS2$))):KEYS2$(LEN(KEYS2$)+1)=PAD$
NO 180   LPRINT "     ";GRAPH$;CHAR1$;"
      ";KEYS1$;DEC1$;"              ";GRAPH$
   ;CHAR2$;"      ";KEYS2$;DEC2$
NK 190 NEXT LOOP
WL 195 IF SET=2 THEN RETURN
ZW 200 RESTORE 1027
VI 210 FOR I=1 TO 8:READ A:CHAR1$(I,I)=CH
   R$(A):NEXT I:READ KEYS1$,DEC1$
JU 215 PAD$=BLANK$(1,(LEN(BLANK$)-LEN(KEY
   S1$))):KEYS1$(LEN(KEYS1$)+1)=PAD$
YX 220 LPRINT "     ";GRAPH$;CHAR1$;"
    ";KEYS1$;DEC1$
KB 250 SET=2:FIRST=28:LAST=37
RL 260 GOSUB 110
XO 270 LPRINT CHR$(12);
AT 300 POKE 752,0:END
NM 1000 DATA 0,48,120,124,62,124,120,48,C
   OMMA1,  0
```

```
JV 1001 DATA 0,0,0,255,255,24,24,24,CTRL
    A,  1
TE 1002 DATA 0,0,0,0,0,0,255,255,CTRL B,
    2
KZ 1003 DATA 24,24,24,248,248,0,0,0,CTRL
    C,  3
KN 1004 DATA 24,24,24,255,255,0,0,0,CTRL
    D,  4
SN 1005 DATA 24,24,24,31,31,0,0,0,CTRL E,
    5
DD 1006 DATA 3,7,14,28,56,112,224,192,CTR
    L F,  6
CJ 1007 DATA 192,224,112,56,28,14,7,3,CTR
    L G,  7
PR 1008 DATA 1,3,7,15,31,63,127,255,CTRL
    H,  8
MI 1009 DATA 0,0,0,0,15,15,15,15,CTRL I,
    9
VR 1010 DATA 255,127,63,31,15,7,3,1,CTRL
    J, 10
TQ 1011 DATA 0,0,0,0,240,240,240,240,CTRL
    K, 11
KS 1012 DATA 240,240,240,240,0,0,0,0,CTRL
    L, 12
KK 1013 DATA 192,192,192,192,192,192,192,
    192,CTRL M, 13
PY 1014 DATA 3,3,3,3,3,3,3,3,CTRL N, 14
DQ 1015 DATA 15,15,15,15,0,0,0,0,CTRL O,
    15
NL 1016 DATA 0,24,24,122,102,122,24,24,CT
    RL P, 16
XA 1017 DATA 0,0,0,31,31,24,24,24,CTRL Q,
    17
GC 1018 DATA 24,24,24,24,24,24,24,24,CTRL
    R, 18
QK 1019 DATA 24,24,24,255,255,24,24,24,CT
    RL S, 19
KU 1020 DATA 0,28,62,62,62,62,28,0,CTRL T
    , 20
ZW 1021 DATA 15,15,15,15,15,15,15,15,CTRL
    U, 21
HI 1022 DATA 255,255,0,0,0,0,0,0,CTRL V,
    22
CU 1023 DATA 24,24,24,31,31,24,24,24,CTRL
    W, 23
UM 1024 DATA 24,24,24,248,248,24,24,24,CT
    RL X, 24
DK 1025 DATA 255,255,255,255,0,0,0,0,CTRL
    Y, 25
KZ 1026 DATA 0,0,0,248,248,24,24,24,CTRL
    Z, 26
LZ 1027 DATA 0,248,248,174,174,10,10,0,ES
    C ESC, 27
FL 1028 DATA 0,16,48,126,126,48,16,0,ESC
    CTRL -, 28
ON 1029 DATA 0,8,12,126,126,12,8,0,ESC CT
    RL =, 29
SV 1030 DATA 0,16,56,124,84,16,16,0,ESC C
    TRL +, 30
TU 1031 DATA 0,16,16,84,124,56,16,0,ESC C
    TRL *, 31
GS 1032 DATA 0,24,60,126,126,60,24,0,CTRL
    ., 96
XW 1033 DATA 0,24,58,126,126,58,24,0,CTRL
    ;,123
NQ 1034 DATA 0,0,0,255,255,0,0,0,SHIFT =,
    124
YD 1035 DATA 0,124,124,112,120,94,78,0,ES
    C SHIFT CLEAR,125
HK 1036 DATA 0,16,56,124,254,0,0,0,ESC DE
    LETE,126
JK 1037 DATA 0,0,0,254,124,56,16,0,ESC TA
    B,127
WQ 2000 DATA 255,207,135,131,193,131,135,
    207,COMMA2,128
```

```
ZG 2001 DATA 255,255,255,0,0,231,231,231,
    INV CTRL A,129
AL 2002 DATA 255,255,255,255,255,255,0,0,
    INV CTRL B,130
NF 2003 DATA 231,231,231,7,7,255,255,255,
    INV CTRL C,131
EH 2004 DATA 231,231,231,0,0,255,255,255,
    INV CTRL D,132
ST 2005 DATA 231,231,231,224,224,255,255,
    255,INV CTRL E,133
LR 2006 DATA 252,248,241,227,199,143,31,6
    3,INV CTRL F,134
SQ 2007 DATA 63,31,143,199,227,241,248,25
    2,INV CTRL G,135
HX 2008 DATA 254,252,248,240,224,192,128,
    0,INV CTRL H,136
XL 2009 DATA 255,255,255,255,240,240,240,
    240,INV CTRL I,137
WK 2010 DATA 0,128,192,224,240,248,252,25
    4,INV CTRL J,138
LO 2011 DATA 255,255,255,255,15,15,15,15,
    INV CTRL K,139
HJ 2012 DATA 15,15,15,15,255,255,255,255,
    INV CTRL L,140
NJ 2013 DATA 63,63,63,63,63,63,63,63,INV
    CTRL M,141
FJ 2014 DATA 252,252,252,252,252,252,252,
    252,INV CTRL N,142
RF 2015 DATA 240,240,240,240,255,255,255,
    255,INV CTRL O,143
YI 2016 DATA 255,231,231,133,153,133,231,
    231,INV CTRL P,144
JT 2017 DATA 255,255,255,224,224,231,231,
    231,INV CTRL Q,145
YH 2018 DATA 231,231,231,231,231,231,231,
    231,INV CTRL R,146
WF 2019 DATA 231,231,231,0,0,231,231,231,
    INV CTRL S,147
ES 2020 DATA 255,227,193,193,193,193,227,
    255,INV CTRL T,148
JM 2021 DATA 240,240,240,240,240,240,240,
    240,INV CTRL U,149
EH 2022 DATA 0,0,255,255,255,255,255,255,
    INV CTRL V,150
DF 2023 DATA 231,231,231,224,224,231,231,
    231,INV CTRL W,151
JR 2024 DATA 231,231,231,7,7,231,231,231,
    INV CTRL X,152
EB 2025 DATA 0,0,0,0,255,255,255,255,INV
    CTRL Y,153
DF 2026 DATA 255,255,255,7,7,231,231,231,
    INV CTRL Z,154
LJ 2028 DATA 255,239,207,129,129,207,239,
    255,ESC SHIFT DELETE,156
GF 2029 DATA 255,247,243,129,129,243,247,
    255,ESC SHIFT INSERT,157
BP 2030 DATA 255,239,199,131,171,239,239,
    255,ESC CTRL TAB,158
KA 2031 DATA 255,239,239,171,131,199,239,
    255,ESC SHIFT TAB,159
ON 2032 DATA 255,231,195,129,129,195,231,
    255,INV CTRL .,224
SS 2033 DATA 255,231,197,129,129,197,231,
    255,INV CTRL ;,251
WB 2034 DATA 255,255,255,0,0,255,255,255,
    INV SHIFT =,252
KJ 2035 DATA 255,131,131,143,135,161,177,
    255,ESC CTRL 2,253
WN 2036 DATA 255,239,199,131,1,255,255,25
    5,ESC CTRL DELETE,254
UK 2037 DATA 255,255,255,1,131,199,239,25
    5,ESC CTRL INSERT,255
```

FIRST STEPS IN ASSEMBLY part 5

Daniel Lea concludes his series on Assembly Language programming with a summary of all the commands available

Welcome to the final instalment of Beginners Assembly Language. I hope you've kept up so far. In this final part I will attempt to tie up some loose ends, and introduce the odd extra command so that you've seen and know about them all. And as the grand finale I present a table of all the available 6502 instructions as a kind of reference guide.

In the an earlier part of the series we discovered the CLC and SEC commands whereby you could set and clear the carry flag in the status register. It is also possible to set and clear other flags in that register. The alterable flags are the Decimal flag, the Overflow flag, and the Interrupt flag.

SEI and CLI

I'll begin with the interrupt flag. When this is set, interrupt requests are disabled and when cleared interrupt requests are enabled once more. The commands are SEI (SEt interrupt) and CLI (CLear Interrupt). The only use I've seen these commands put to is in Display List Interrupts (See Listing) where the command RTI (ReTurn from Interrupt) is used as the DLI equivalent of RTS (See program listings).

CLV

CLV (CLear oVerflow) is used to clear the overflow flag. Note that no equivalent command exists to set it.

SED and CLD

Lastly are SED (SEt Decimal) and CLD (CLear Decimal) instructions. SED enables access to a special mode where numbers are represented in a form known as Binary Coded Decimal (or BCD). This is where the value a byte represents ranges from $0 to $99 (instead of $0 to $FF as is usual. It is used as its name suggests to represent decimal in a better form. The lowest nibble (set of four bits) represents the units digit and the highest nibble represents the tens digit (each digit of course goes from 0 to 9). There should be no problem in this.

A problem in BCD arises when addition or subtraction of two numbers in this format occur.

```
e.g.   $99
      +$11
      -------
```

In normal binary addition this would produce an answer of $AA. However as you know this is not acceptable as a Binary Coded Decimal number. The answer is the special maths mode mentioned earlier.

Once SED is used to activate the BCD mode, the more accepted answer of 99 + 11 appears. That is 110. In this case $10 in the accumulator and 1 in the carry flag. CLD would return the processor to its usual addition mode.

NOP

I'll complete our look at the machine code commands with a command which does nothing! NOP (No OPeration) does nothing except delay the processor slightly, hence it is quite useful in delay loops.

The reason, I think, why this command exists at all is that in the bad old days of computing people didn't have assemblers with which to program machine code, they had to do it by hand. So the NOP command was created by the microprocessor designers, so that a programmer could leave gaps in his program (i.e. filled with NOPs) so he could insert instructions at a later date without having to recalculate any jumps and branches etc.

That's nearly it except for the table which you will notice somewhere about this page (or the next).

If you have followed all of my articles you should have a good sound knowledge of programming in Assembly Language and be able to progress onto some very advanced programming, maybe even write your own machine code game. To advance yourself from this point I recommend Mapping the Atari by Compute! as a superb book. And also keeping an eye on this magazine .. tiere are some super articles in back issues if you sift though them. Anyway happy programming and bye .... for now at least!

MNEMONIC	MEANING	OPERATION	ADDRESSING MODES 1	2	3	4	5	6	7	8	9	FLAGS C	Z	N	V	Other
ADC	ADd with Carry	A + M + C > A	ok	ok	ok	XY	X	-	ok	ok	-	X	X	X	X	
AND	AND with Accumulator	A ^ M > A	ok	ok	ok	XY	XY	-	ok	ok	-		X	X		
ASL	Arithmetic Shift Left	C < 7 ,,, 0 < 0	-	ok	ok	X	X	-	-	-	-	X	X	X		
BCC	Branch if Carry Clear	Branch if C = 0	-	ok	ok	X	X	-	-	-	-	X	X	X		
BCS	Branch if Carry Set	Branch if C=1	-	-	-	-	-	-	-	-	ok					
BEQ	Branch if EQual to 0	Branch if Z=1	-	-	-	-	-	-	-	-	ok					
BIT	BIT test	A ^ M	-	ok	ok	-	-	-	-	-	-		X	X	X	
BMI	Branch if MInus	Branch if N = 0	-	-	-	-	-	-	-	-	ok					
BNE	Branch if Not Equal to 0	Branch if Z = 0	-	-	-	-	-	-	-	-	ok					
BPL	Branch if PLus	Branch if N = 1	-	-	-	-	-	-	-	-	ok					
BRK	BReaK	Interrupt Processor	-	-	-	-	-	-	-	-	-					I,B
BVC	Branch if oVerflow Clear	Branch if V = 0	-	-	-	-	-	-	-	-	ok					
BVS	Branch if oVerflow Set	Branch if V = 1	-	-	-	-	-	-	-	-	ok					
CLC	CLear Carry flag	0 > C	-	-	-	-	-	-	-	-	-	0				
CLD	CLear Decimal flag	0 > D	-	-	-	-	-	-	-	-	-					D = 0
CLI	CLear Interrupt mask	0 > I	-	-	-	-	-	-	-	-	-					I = 0
CLV	CLear oVerflow flag	0 > V	-	-	-	-	-	-	-	-	-				0	
CMP	CoMPare to accumulator	Compare A to M	ok	ok	ok	-	-	-	-	-	-	X	X	X		
CPX	ComPare to X reg.	Compare X to M	ok	ok	ok	-	-	-	-	-	-	X	X	X		
CPY	ComPare to Y reg.	Compare Y to M	ok	ok	ok	-	-	-	-	-	-	X	X	X		
DEC	DECrement	M - 1 > M	-	ok	ok	X	X	-	-	-	-		X	X		
DEX	DEcrement X	X - 1 > X	-	-	-	-	-	-	-	-	-		X	X		
DEY	DEcrement Y	Y - 1 > Y	-	-	-	-	-	-	-	-	-		X	X		
EOR	Exclusive OR with Accum.	A v M >A	ok	ok	ok	XY	XY	-	ok	ok	-		X	X		
INC	INCrement	M + 1 > M	-	ok	ok	X	X	-	-	-	-		X	X		
INX	INcrement X	X + 1 > X	-	-	-	-	-	-	-	-	-		X	X		
INY	INcrement Y	Y + 1 > Y	-	-	-	-	-	-	-	-	-		X	X		
JMP	JuMP	Jump to location	-	ok	-	-	-	ok	-	-	-					
JSR	Jump to SubRoutine	Jump to subroutine	-	ok	-	-	-	-	-	-	-					
LDA	LoaD Accumulator	M > A	ok	ok	ok	XY	X	-	ok	ok	-		X	X		
LDX	LoaD X	M > X	ok	ok	ok	Y	Y	-	-	-	-		X	X		
LDY	Load Y	M > Y	ok	ok	ok	X	X	-	-	-	-		X	X		
LSR	Logical Shift Right	0 > 7....0 > C	-	ok	ok	X	X	-	-	-	-	X	X	X		
NOP	No OPeration	No operation	-	-	-	-	-	-	-	-	-					
ORA	OR with Accumulator	A v M > A	ok	ok	ok	XY	XY	-	ok	ok	-		X	X		
PHA	PusH Accum. onto stack	A > Ms S -1 > S	-	-	-	-	-	-	-	-	-					
PHP	PusH status reg. (P) onto stack	P > Ms S - 1 > S	-	-	-	-	-	-	-	-						
PLA	PulL Accumulator from stack	S + 1 > S Ms > A	-	-	-	-	-	-	-	-	-		X	X		
PLP	PulL status reg. (P) from stack	S + 1 > S Ms > P	-	-	-	-	-	-	-	-	-	X	X	X	X	all
ROL	ROtate Left	C < 7 .....0 < C	-	ok	ok	X	X	-	-	-	-	X	X	X		
ROR	ROtate Right	C > 7... .. 0 > C	-	ok	ok	X	X	-	-	-	-	X	X	X		
RTI	ReTurn from Interrupt	Return from Interrupt	-	-	-	-	-	-	-	-	-					
RTS	ReTurn from Subroutine	Return from subroutine	-	-	-	-	-	-	-	-	-					
SBC	SuBtract with Carry	A - M - C > A	ok	ok	ok	XY	X	-	ok	ok	-	X	X	X	X	
SEC	SEt Carry flag	1 > C	-	-	-	-	-	-	-	-	-	1				
SED	SEt Decimal flag	1 > D	-	-	-	-	-	-	-	-	-					D = 1
SEI	SEt Interrupt mask	1 > I	-	-	-	-	-	-	-	-	-					I = 1
STA	Store Accumulator	A > M	-	ok	ok	X	X	-	ok	ok	-					
STX	STore X	X > M	-	ok	ok	-	Y	-	-	-	-					
STY	STore Y	Y > M	-	ok	ok	-	X	-	-	-	-					
TAX	Transfer Accumulator to X	A > X	-	-	-	-	-	-	-	-	-		X	X		
TAY	Transfer Accumulator to Y	A > Y	-	-	-	-	-	-	-	-	-		X	X		
TSX	Transfer Stack pointer to X	S > X	-	-	-	-	-	-	-	-	-		X	X		
TXA	Transfer X to Accumulator	X > A	-	-	-	-	-	-	-	-	-		X	X		
TXS	Transfer X to Stack pointer	X > S	-	-	-	-	-	-	-	-	-					
TYA	Transfer Y to Accumulator	Y > A	-	-	-	-	-	-	-	-	-		X	X		

ADDRESSING MODES

1 Immediate
2 Direct
3 Zero Page Direct
4 Indexed Direct
5 Zero Page Indexed Direct
6 Indirect
7 Pre-Indexed Direct
8 Post-Indexed Direct
9 Relative

Meaning of various letters and notation used

A	Accumulator
M	Memory location referred to by instruction
X	X index
Y	Y index
>	From - to
^	AND
v	OR
EOR	Exclusive OR
7......0	reference to bits in a byte
S	Stack pointer
Ms	Memory address on the stack
[C]	compliment of carry flag

In the information on addressing modes

ok	Ok to use the particular addressing mode with the instruction indicated
X	Ok to use the X index
Y	Ok to use the Y index
XY	Okay to use the X and the Y indices
-	Indicates a particular addressing mode isn't available

A full line of dashes indicating no addressing required with the particular command

In the information on flags

X	an X indicates a particular flag is affected
0	a flag is cleared
1	a flag is set

In the other column any flag affected is indicated by its letter

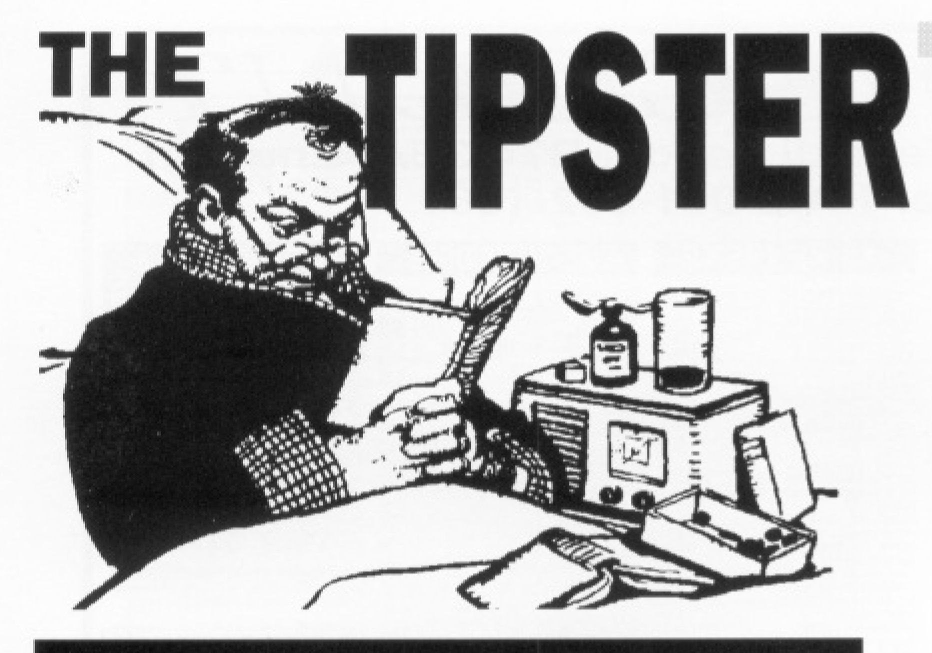
List of flags and symbols

N Sign (negative) flag ..
1= Negative number
V Overflow flag ...
1= TRUE
B Break command
D Decimal flag ...
1= Decimal mode
I Interrupt flag ...
1= Interrupt requests disabled
Z Zero flag ...
1= Result zero
C Carry ...
1= Carry/no borrow.

```
10 ;-------------------
20 ;DLI SCROLLING STARS
30 ;BY DJL ... FEB '92
40 ;-------------------
50 ;
60 SDLSTL=560
70 DLST=203
80 COLPF=53270
90 VCOUNT=54283
0100 WSYNC=54282
0110 RND=53770
0120 HPOSM0=$D004
0130 GRAFM=53265
0140 ;
0150 ;Change Display List
0160 ;
0170  *=$8000
0180 ;
0190 ;Same routine as in previous
0200 ;program
0210 ;
0220  LDA SDLSTL
0230  STA DLST
0240  LDA SDLSTL+1
0250  STA DLST+1
0260  LDY #2
0270 DLOPX LDA (DLST),Y
0280  CLC
0290  ADC #128
0300  STA (DLST),Y
0310  INY
0320  CPY #4
0330  BNE DLOPX
0340  LDY #6
0350 DLOOP LDA (DLST),Y
0360  CLC
0370  ADC #128
0380  STA (DLST),Y
0390  INY
0400  CPY #28
0410  BNE DLOOP
0420  LDA #DLI&255
0430  STA 512
0440  LDA #DLI/256
0450  STA 513
0460 ;
0470 ;Setup Player Missle graphic
0480 ;
0490  LDA #170   ;set up
0500  STA GRAFM ;horiz missiles
0510  LDA #0     ;Put missiles off
0520  STA HPOSM0    ;the screen
0530  STA HPOSM0+1
0540  STA HPOSM0+2
0550  STA HPOSM0+3
0560  LDA #0   ;black background
0570  STA 710
0580 ;
0590 ;Setup positions and speeds of
0600 ;stars
0610 ;STx = position and SPx = speed
0620 ;X index = row in display list
0630 ;
0640  LDX #0
0650 SETLP
0660  LDA RND
0670  STA ST1,X
0680  JSR RAND
0690  STA SP1,X
0700  LDA RND
0710  STA ST2,X
0720  JSR RAND
0730  STA SP2,X
0740  LDA RND
0750  STA ST3,X
0760  JSR RAND
0770  STA SP3,X
0780  LDA RND
0790  STA ST4,X
0800  JSR RAND
0810  STA SP4,X
0820  INX
0830  CPX #23
0840  BNE SETLP
0850  LDA #$C0  ;activate DLI's
0860  STA $D40E
0870  RTS ;return from subroutine
0880 ;
0890 ;random number subroutine
0900 ;to set speed of star
0910 ;
0920 RAND LDA RND ;random no. 0-255
0930  AND #3 ;reduce range 0-3
0940  CLC     ;add 1 on to prevent
0950  ADC #1 ;stationary stars
0960  RTS
0970 ;
0980 ;Actual Display list interrupt
0990 ;
1000 DLI
1010  SEI ;SEt Interrupt
1020  PHA ;store accum.
1030  TXA ;and X index
1040  PHA ;on the stack
1050  LDA VCOUNT ;scan line value
1060  LSR A ;quarter
1070  LSR A
1080  CLC      ;use to fine
1090  SBC #3 ;gr.0 screen line value
1100  TAX
1110  CLC
1120  ADC 20       ;alter star colours
1130  STA $D012   ;player 0 col.
1140  STA $D013   ;player 1 col.
1150  STA $D014   ;player 2 col.
1160  STA $D015   ;player 3 col.
1170  STA WSYNC   ;wait a scan line
1180 ;
1190 ;use star position value to set
1200 ;the horizontal value of the
1210 ;player missile
1220 ;add on speed and store...
1230 ;
1240  LDA ST1,X
1250  STA HPOSM0
1260  CLC
1270  ADC SP1,X
1280  STA ST1,X
1290  LDA ST2,X
1300  STA HPOSM0+1
1310  CLC
1320  ADC SP2,X
1330  STA ST2,X
1340  LDA ST3,X
1350  STA HPOSM0+2
1360  CLC
1370  ADC SP3,X
1380  STA ST3,X
1390  LDA ST4,X
1400  STA HPOSM0+3
1410  CLC
1420  ADC SP4,X
1430  STA ST4,X
1440  STA WSYNC
1450 ;reset player missile posn. to 0
1460 ;so star appear as a small blob
1470  LDA #0
1480  STA HPOSM0
1490  STA HPOSM0+1
1500  STA HPOSM0+2
1510  STA HPOSM0+3
1520  PLA ;pull all values
1530  TAX ;back off stack
1540  PLA
1550  RTI ;ReTurn from interrupt
1560 ;
1570 ;space in the program to put
1580 ;the values necessary to
1590 ;control the stars
1600 ;
1610 ST1 *=*+40
1620 SP1 *=*+40
1630 ST2 *=*+40
1640 SP2 *=*+40
1650 ST3 *=*+40
1660 SP3 *=*+40
1670 ST4 *=*+40
1680 SP4 *=*+40
```

```
10 ;------------------------------
20 ;DISPLAY LIST INTERRUPT DEMO 1
30 ;BY D.J.LEA....          FEB '92
40 ;------------------------------
50 ;
60 ;
70 SDLSTL=560
80 DLST=203
90 COLPF=53270
0100 VCOUNT=54283
0110 WSYNC=54282
0120 ;
0130  *=$0600
0140 ;
0150 ;Setup Display List
0160 ;
0170  LDA SDLSTL  ;Copy dlist vectors
0180  STA DLST    ;to page zero
0190  LDA SDLSTL+1
0200  STA DLST+1   ;setup routine
0210 ;
0220 ;The following display list
0230 ;setup routine simply adds 128
0240 ;to the appropriate bytes in
0250 ;the display list
0260 ;
0270 ;add 128 to bytes 2 and 3
0280 ;
0290  LDY #2
0300 DLOPX LDA (DLST),Y
0310  CLC
0320  ADC #128
0330  STA (DLST),Y
0340  INY
0350  CPY #4
0360  BNE DLOPX
0370 ;
0380 ;add 128 to bytes 6 to 28
0390 ;
0400  LDY #6
0410 DLOOP LDA (DLST),Y
0420  CLC
0430  ADC #128
0440  STA (DLST),Y
0450  INY
0460  CPY #29
0470  BNE DLOOP
0480 ;
0490 ;set the Display interrupt
0500 ;vectors to my routine
0510 ;
0520  LDA #DLI&255 ;high byte of DLI
0530  STA 512
0540  LDA #DLI/256 ;low byte of DLI
0550  STA 513
0560  LDA #$C0  ;activate DLI's
0570  STA $D40E
0580  RTS ;return from subroutine
0590 ;
0600 ;Display List Interrupt routine
0610 ;
0620 DLI
0630  PHA ;store accumulator on stack
0640  SEI ;set interrupt flag
0650  LDA VCOUNT ;screen line value
0660  LSR A ;quarter
0670  LSR A
0680  CLC
0690  ADC 20 ;add on location 20
0700  STA WSYNC ;pause for a scanline
0710  STA COLPF+2 ;screen colour
0720  CLC
0730  ADC #8
0740  STA COLPF+1 ;text colour
0750  PLA ;pull accum. from stack
0760  RTI ;return from interrupt
```

Source for Display List Interrupts



GOAL!

Well here we go again, another bumper pack of all that is best in the world of Atari Classic tips. University work has meant that this one was a bit late getting to the editor but I hope he'll forgive me for that (chance would be a fine thing!).

Comic Relief has been and gone once again but the fun doesn't stop there, I hope to continue it for those of you who read this. This month we have the solution to Snowball (I hope ... it's huge!). Anyway stop yapping and ..... izzy wizzy lets get bizzy!

RICK HANSON

Roy Astley has spent two months solving RICK HANSON and has now kindly allowed me to publish his hard work, so get your adventure out and let's get going!.

It's late at night now and I will not risk me eye sight, sanity, beauty sleep, artistic integrity and general well being, so everything is the right way round. (I know that it's boring but you can't have everything)

W, I, GET RECORDER, PLAY RECORDER, (PRESS SPACE), THROW RECORDER, O, W, N, GET PIE, S, W, U, N, N, D, N, E, GET SPANNER, W, S, U, S, S, D, E, E, E, N, GET POLISH, S, W, W, W, U, N, (WAIT 6 TIMES), LEAP, D, HIT MAN WITH SPANNER, O, D, D, SE, S, SW, W, NW, N, W, W, W, GET COIN, W, S, W, GET RAZOR, E, N, E, N, E, I, GET HOOK, O, W, I, W, S, S, READ NUMBERS, N, N, E, O, S, E, E, S, S, W, W, W, S, I, PUT COIN IN BANDIT, PLAY BANDIT, GET COIN, W, PAY BARTENDER COIN, DRINK ALE, U, U, U, U, N, N, N, OPEN DOOR, E, SLEEP, GET LETTER, READ LETTER, W, N, OPEN W DOOR, W, SHAVE WITH RAZOR, E, S, S, S, S, D, D, D, D, E, O, N, E, E, E, E, N, N, W, W, N, I, W, S, S, READ NUMBERS, E, S, E, U, NE, E, CUT ROPE WITH RAZOR, GET ROPE, W, SW, D, W, N, N, N, O, N, W, I, ASK FOR 12 APOSTLES, READ BOOK, O, E, N, NW, N, N, N, N, W, S, W, W, W, GET GLOVES, E, S, S, GET CLIP, N, N, E, E, N, E, S, SE, I, PICK LOCK WITH CLIP, S, PULL JACK N, PULL JACK NW, WEAR HANDKERCHIEF, N, (PRESS SPACE), SEEK, GET BLADE, S, PULL JACK E, TURN HANDLE, PUSH JACK UNDER TRUCK, PULL HANDLE, PULL HANDLE, TURN HANDLE CLOCKWISE, LIE, N, (PRESS SPACE), WEAR GLOVES, CUT WIDE PIPE WITH BLADE, FILL BOTTLE WITH PETROL, S, STAND, W, SE, S, O, NW, N, N, NE, E, E, E, E, S, S, W, SW, GET TYRE, I, GET COVER, O, NE, E, N, N, W, W, W, W, SW, S, W, N, N, SWIM, (PRESS SPACE), S, W, WAVE COVER, DODGE, W, N, I, GET TOWEL, O, DROP PIE, N, N, W,DIG, GET GUN, NW, NE, E, E, OPEN DOOR, I, E, N, GET SKIS, S, W, O, W, N, TIE ROPE TO HOOK, THROW ROPE, CLIMB, (PRESS SPACE), N, READ WALL, S, W, NW, N, NE, N, E, WAX SKIS WITH POLISH, WEAR SKIS, D, D, D, DROP SKIS, E, N, GET MATCH, S, WAIT, MAKE BOMB, LIGHT BOMB, THROW BOMB, S, DROP SUIT, E, N, GET UNIFORM, WEAR UNIFORM, I, DRIVE, DRIVE, DRIVE, GALOOP, DRIVE, O, S, OPEN DOOR, E, I, N, O, S, O, U, N, D, D, D, W, W, W, N, GET SCREWDRIVER, S, E, E, E, E, E, E, D, D, D, W, N, N, E, GET BULLET, E, S, S, W, U, U, U, E, E, N, N, E, E, S, TYPE 18970, S, OPEN DOOR WITH SCREWDRIVER, S, KILL THE GENERAL WITH RAZOR *(DA DA DAH!!!!)*

A plethora of tips for **FANTASTIC SOCCER** come from John Hubbock and Paul Gilmore from Liverpool. When you are running in to tackle the opposition keep your finger on the button and you will easily get the ball and send the opposition flying. When shooting, run to the corner of the area and keep the finger on the button and aim for the goal. If there are no players between the goal and you then you'll have lobbed the goalie and scored in the top corner. When you are trying to run faster, just keep slide tackling and you'll end up going much faster and always pick the defence that has the five defenders which makes it the best for this type of game.

Hold the joystick down and to the left if you are the white player or down and to the right if you are the red player

Last, but not least, John throws in a couple of tips for **RAMPAGE**. On some buildings you can climb to where the windows end and punch the building as much as you like which gives you points beyond points. Also when your partner dies and turns back into a human, you can run over to him and eat him (or her!)

GAUNTLET

Yet again **GAUNTLET** has given rise to another tip, this time from Stephen Hargreaves of Crewe. If you find it hard to pass tricky rooms that only have enough keys to get out in the right sequence then what you have to do is as follows. In two player mode both players can pick up the same key, enabling the room to be completed easily. All you have to do is both move to collect the same key (from the adjacent space) at exactly the same time. Incidentally this can also be used for collecting food and potions.

I think this is a first in that we have a quick tip for **ALTERNATIVE REALITY** from Frank Cunningham of Stirling in Scotland. He says that the riddle of the doors of Acrimimirils Tomb is 2, 1, 1, 2, 2, (second door, first door, first door, second door, second door).

FABULOUS THREESOME

Hints for **TAPPER**, **TWILIGHT WORLD** and **FRED** come from Lee Nelson of Woolwich.

First of all when you lose all of your lives in **TAPPER**, simply press fire to restart where you left off. This can be done indefinitely.

If you see cracks in any of the walls, in **TWILIGHT WORLD** it is very likely that there is an entrance to a secret level there.

On level six of **FRED**, try to stay on the top platforms for as long as possible as there are many bonuses to be had.

SNOWBALL

a complete walk-through by Simon Carter

Simon Carter has been waiting a long time but his time has now finally come. He provides us now with the complete solution to **SNOWBALL** from Level 9. Its a bit big, what follows below is the full complete solution, written the right way round ('cos it takes too long the other way!). He also provided me with some maps but I can't promise that they'll appear this issue 'cos there's nine pages of them! If they don't appear this issue then they'll be with you shortly O.K.?

Remember that the solution is round the right way so that PUNCH DOG = PUNCH DOG (simple really!)

Let's go!!!

Open the coffin by pulling the lever. Get out and go North to the mortuary entrance. Summon another coffin by pressing any three buttons. Go south and use the coffin to go through the trapdoor in the ceiling to the next level. Go North again and leave through the mortuary door, avoiding Nightingales at all costs. Travel east until you reach a button in the floor. Press this button once to call the lift.

Enter the lift and after the door has closed go down through the floor. Continue descending until you reach a pit with a toolbox in. After taking this toolbox go up through the lift and beyond until you come to a trapdoor at the top of the shaft. Open this door. Once through go South until you come to an airlock. The trip is long so don't be fooled by repetitive locations.

Once in the airlock you will find two buttons - green and yellow. The rule with airlocks is that the green button opens the door you have just come through whilst the yellow button opens the door you are about to go through. In this case the green button will open the north door and the South door will be opened by the yellow button.

Go through the South door until you reach the smooth cylinder. Go down from the smooth cylinder into the massage parlour and get on the couch. Wait there for one turn and then get off. Having a message enables you to carry more items. Staying on the couch has very serious consequences .....(no prizes for guessing what they are!)

After having the message go east and get the stacker lift but leave the scalpel. Return to the smooth cylinder and go South to the cyladder. Wait here for a robot to approach and follow it down. You can try before a robot arrives but you will be rejected.

Now go North from the large low room, through the library, into the mempak archive. Get the mempak and return to the library. Insert the mempak into the viewer and then examine the viewer. Two codes will be given - yours and the crew member you are supposed to wake. Make a note of the crew member's as it is vitally important. Using the screwdriver from the toolbox get the batpak from the viewer.

Now go to the cards and examine the airbed. You will find some LED's. Upon examination it will be discovered that they are in fact a diagnostic probe. Go to the cupboard to the North of the diner and get both cup and lamp. Return to the diner and insert the cup into the machine. After filling the cup with thin lentil custard go to the holoprojectors South of the S.W. freezer control. Once there search the body and take the bracelet, necklace and Kevlar leotard.

Now go to the console and wear the visor. To call up the menu examine the screen: LOOK AT (X). BLINK (where X is a number).

Return to the diner and enter the date. This will bring you close to the damaged janitor droid. When you find him attach the diagnostic probe to him.

Once you have found out which part he requires look for it in the surrounding area. When it is in your possession give the part to the droid and he will give you a bubble helmet.

Now you need to obtain the lance from the droid handling the stores. This is accomplished by the following method:

1. Get the red ticket from the red ticket machine.
2. Swap the red ticket for a red form.
3. Get the green ticket form the green ticket machine.
4. Swap the red form and the green ticket for an orange form.
5. Get another red ticket.
6. Swap the red ticket and the orange form for a yellow form.
7. Get another green.ticket.
8. Swap the green ticket and the yellow form for a green form.
9. Get another red ticket.
10. Swap the red ticket and green form for the lance. (phew!)

Now go to the narrow Marbon cylinder and enter the airlock. Remember here to wear the leotard and helmet. Also insert the batpak in the lamp. You are now ready to traverse the Web. This will take you to the snowfield below the platform A. Summon the monorail and use it to go to platform B. Enter the Snowball Hilton and go south until you reach a store room with a flask of air and an aerosol can. Attach the flask to your helmet and place the can in the toolbox. Now close the toolbox.

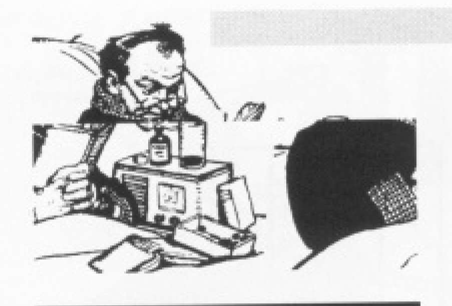
Return to Platform B and visit Platforms D, F and H. At D get the shovel. At F go to the south corner of the cave and get the linked cylinders. At H go to the large hanger and get the ceramic armour. Now go to Platform C and dig in the snow by the ladder to find the keys to the snowdozer. Enter the snowdozer itself and get the fire extinguisher. Leave the snowdozer. Once you are next to the ladder drop everything except the cup, leotard, bracelet, stacker lift and the helmet. By now you need to wake the crew member to obtain the security code for the door in the "Hilton".

The key for the crew member code you received in the library is as follows:-

Colour 1. Mortuary door - Blue or green.
Colour 2. Colour of freezer disk.
Colour 3. Sector on the corridor.
Colour 4. Level of freezer disk.
Colour 5, 6, 7. Coffin code itself.

Return to the first airlock you used and go North. Examine the bracelet you removed from the body regularly. It will have a series of colours on it. When the last colour is the same as

it goes on over here ☞



QUICK E'S ***** QUICK E'S ***** QUICK E'S ***** QUICK E'S

Two Quickies from Fred Meijer of The Netherlands. First up is another for **FRED**. If you type in CHAOS then you can select the starting level by pressing 0 to 9.
Secondly in **MISSION SHARK**, if you type in the name of the author JANUSZ PELC then you can also select the starting level by pressing 0 to 9.

SNOWBALL continued

colour 2 on the crew members code go down the ramp in the same colour section. Go East or West until you find the lift button. Summon the lift and go to the level corresponding colour to number 4 above. If number 4 was blue then you would press the blue button in the lift. Leave the lift and go East or West checking for the bracelet against the lights in the ceiling. When the lights in the ceiling are the same as colours 2, 3 and 4 enter the mortuary corresponding to number 1 above. Now press the three buttons that are the same colours as 5, 6 and 7 above. Take the coffin that appears to the revival machine which is to the north of the lift. To lift the coffin you need the stacker lift. Remember that you still have to avoid the Nightingales. Once the crew member is awake give them the cup with the thin lentil custard. They will then give you the code for the security door. You can now return to the door and go through. From the forest glade go North East and get the silver tray and flute. Go also to the observatory and get the dark glasses. From the pink room you need to get the cat.

Return to Platform C and go down to the snowdozer. Wear the ceramic armour and dark glasses and make sure you are in possession of the lance and linked cylinders. You can now repair the snowdozer track. Using the keys you found in the snow enter the snowdozer, start it by turning the key.

Now make sure you have got the toolbox, silver tray, flute, cat and fire extinguisher. Go to Platform D and descend the ladder. From the bottom go North, through the ice tunnel until you reach the massive waldroid. Here you can open the toolbox with the aerosol in it. From here climb Jacob's ladder until you reach the wide ledge. Drop the cat. This will go about removing the slime to let you carry on. Climb the ramp and when you reach the T-junction wave the silver tray. Then make your way to the control room. After entering you will see a terrorist with a rather menacing bomb. Now play or blow the flute which will shatter the bomb. You now have to extinguish the flames with the fire extinguisher using PRESS EXTINGUISHER. You can now return the ship to auto pilot by pulling another lever.

Finished

SCORING

You score points for each of the following achievements

1. Opening the coffin.
2. Summoning another coffin.
3. Reaching the top of the elevator shaft.
4. Being massaged.
5. Using the cyladder.
6. Using the video viewer.
7. Filling the square cup.
8. Using the screen at freezer control.
9. Repairing the janitor droid.
10. Obtaining the lance.
11. Waking the frozen crew member.
12. Learning the security code.
13. Opening the security door.
14. Repairing the snowdozer track.
15. Starting the snowdozer.
16. Removing the massive waldroid.
17. Clearing the wide ledge of slime.
18. Destroying the portable laser.
19. Removing the hijacker from the control room.
20. Returning the ship to autopilot.

Sometimes after completing one of these tasks the score doesn't register, however the score will usually be updated later.

GENERAL HINTS

To avoid the tedious web journey collect the handgun and step off the web. Wait until the game says you had better match speeds. Then you should SHOOT GUN. This will place you below one of the platforms. This is however a one-way journey. To return use the spidroid hopper in the "Hilton" which will take you back across the web. It can also be used to return to the "Hilton".

In the area beyond the security door use the holowand from the snake pit to dispel the illusions.

HELP WANTED **** HELP WANTED **** HELP WANTED ****

Just one cry for help this issue. L.D. Baxter of Hove is absolutely stuck on **QUESTRAU** (I hope that I have spelt that correctly it could be **QUESTRON**)

He asks where is the trumpet? I think that he's done everything right but there must be one thing wrong. Also when he has crossed the sea and gone into the dungeons he cannot get out - the game stops and an error message is produced. It is different each time. He asks if there is something wrong with the game or the disk or is he doing something wrong.

Right so, there is this issue's challenge. Don't stand there reading this, get busy and solve L.D. Baxter's problem.

The plea goes out again for more maps and stuff to be sent in, it's getting rather bare here in the den and it needs filling up. Has anyone got the solution and maps to Worm In Paradise. I have seen the maps before but I'll be blowed if I can find the issue of Atari User that they appeared in.

Anyway, see you next time. Bright eyed and bushy tailed ready for plenty of exclusive tips.

Send your hints, tips and maps to

The Tipster
New Atari User
P. O. BOX 54
Stafford
ST16 1DR

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If your hint, tip or map is used by The Tipster you can claim a FREE CASSETTE (from those currently available from The Accessory Shop) but you won't get one if you don't send something to The Tipster - get tipping now!

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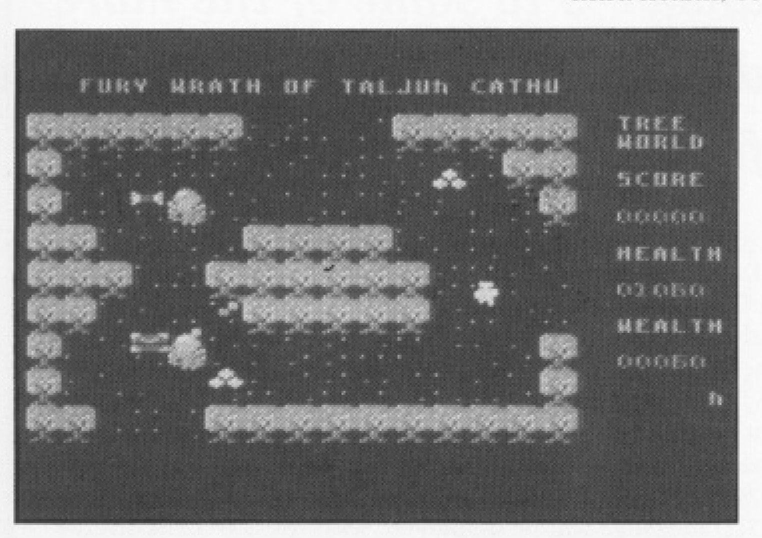
If you see your name in this column just drop us a line and say 'My name is ..... and I claim my free Tipster cassette' and simply tell us which cassette you would like (give an alternative just in case). We will whip it off to you poste haste (or straight away). If you prefer you can always give us a ring instead on the usual number

New XL/XE software

FURY The Wrath of Taljun Cathu

With the bulk of new commercial software originating in Poland and Germany it's easy to overlook the continuing enthusiasm of 8-bit supporters on the other side of the Atlantic. While Atari Corporation attempt to reverse their losses with promises of Falcons, Jaguars and other exotic creatures, several other organisations have remained loyal to the 8-bits. Aerion Software of New York is a new company to the Atari scene and its President Emin Kaunis says that inspiration has been gained from the lack of quality in current computer games. He aims to fill the gap with inexpensive, user-friendly, enjoyable software. A tall order?

Aerion's FURY is described as an action adventure though in reality it's a simple shoot 'em up. Your joystick controls an unnamed hero whose role is to reclaim land invaded by an evil wizard named Taljun Cathu. There are five different worlds (tree, rock, alien, insect and fire), each constructed from several screens viewed from an overhead perspective. The minutely proportioned hero can walk and fire single shots in any of the joystick directions. Your aim is to annihilate a variety of adverse inhabitants who otherwise fire back at you. You must also collect various objects that could be to your advantage. Some items bring you extra health, some extra wealth and others are rather unpleasant! Occasionally you may enter a shop and providing you've attained sufficient cash you can purchase special capabilities - faster walking speed, increased fire power, fireballs, confusion spells, limited shields and 'Armageddon' smart bombs. However, I completed the first level without requiring any extras.



Aerion describe the graphics as 'state of the art' but I'm not sure which decade they are referring to. The scenes are very straightforward indeed and the text is excessively fuzzy and difficult to read. Some of the nasties are quite well drawn but the game is clearly confined by unsophisticated programming techniques. Sound effects and music are basic, in more ways than one!

Playing Fury is like entering a timewarp. It's reminiscent of those addictive little arcade games of the early 1980's - good fun, but a million miles from the technical standard of modern-day entertainment. I had high hopes but, sadly, I must conclude that Aerion will have to do much better than this if they are to accomplish their President's commendable objectives.

Aerion Software can be reached at P.O. Box 1222, Riverdale Station, New York, NY 10471-1222, USA.

Title:	***FURY***
Supplier:	***Aerion Software***
Price:	***$24.95 inclusive***
Format:	***Disk***
Reviewer	***Paul Rixon***

MATH ENCOUNTER

Almost all of the computer programs that aim to teach maths do so by creating a game which is dependant on the user answering a number of numerical problems. Math Encounter is no different but is somewhat unique in being one of the very earliest of this type of program that looks as good today as when it was first released.

The first thing that sets Math Encounter apart is that it comes as a ROM cartridge so is accessible to every Atari owner. The second is that it was designed and programmed by Professor John Y. Hsu who, presumably, is qualified in the education field. It certainly looks that way when the quality of the program is considered. The game itself is quite simple with four alien spacecraft at the top of the screen and your 'Hypersonic Missile Craft' at the bottom. You choose the starting level and the discipline from addition, subtraction, multiplication and division and the first problem comes rolling along the foot of the screen.

On the first few levels the problems are quite easy and you have a good deal of time to work out the answer. Each of the four craft at the top of the screen has a number, only one of which is correct. You simply fire a missile at the ship you think has the right answer. If correct you score points and the next problem rolls on, but if you did not get it right then the correct ship begins to flash allowing you to shoot it and progress to the next problem. Initially the problems are quite easy and most children who have learned basic maths skills should be able to cope and have fun doing so. On the first two levels the screen can be frozen allowing the child, or a parent, to study the answer. On the highest levels however even the most agile minded adult may find things a little harder!

Levels 5 and 6 increase the arcade element of the game requiring you to keep an eye on fuel, avoid meteorites and collect fuel pods as you attempt to answer the question. These levels force you to retain the problem in your mind rather than study it on screen for it is easy to linger in the path of a falling meteorite while working out the answer by looking at the problem.

The graphics are fairly simple but quite adequate for this type of program but what has kept the program relevant today is a good, sound understanding of the methods of teaching maths. There is just the right balance of game playing and teaching, making Math Encounter ideal for all ages. The only thing that seems to be missing is the ability to mix problem types but then children are normally taught only one concept at a time so this is not a major problem.

The surprise is that this professionally produced and boxed program has, seemingly, only just surfaced in the UK. It should certainly have been available from the beginning but we should be grateful that there it did not disappear long ago as most educational programs have done. Definitely one to put on your educational shopping list.

Title:	***MATH ENCOUNTER***
Supplier:	***Micro Discount***
Price:	***£ 5.95***
Format:	***ROM cartridge***
Reviewer:	***Les Ellingham***

TRANSDISK IV

SOLVING SOME PROBLEMS

Raphael Espino has some answers to some of the more difficult aspects of transferring from tape to disk

Oh no! not another article on TransDisk IV, haven't there been enough already? Well, this article is different. While all other articles have taken a look at this brilliant piece of software and pointed out a few problems, this article actually looks at how to solve them!

ENHANCED DENSITY PROBLEMS

The first problem is with the 1050 drive. Whereas 810 users can use DOS 2.0 and XF551 owners can use a double density DOS (SpartaDos or Mydos 4.0) to transfer TransDisk files from one disk to another, us 1050 owners are stuck with a little problem. DOS 2.5, and in fact all other enhanced density DOS's, mess up the TransDisk menu and therefore cause all sorts of trouble. The only way around this problem was to use DOS 2.0 like our 810 counterparts. This however meant that sectors 708 to 908 become unavailable to DOS. That's 200 sectors straight down the drain on every disk you use. What a waste! On top of that, if TransDisk does save any games onto these sectors (which will happen when all other sectors are full), then these games too will become unaccessible to DOS 2.0. Now, at last, there is an alternative.

The first thing to do is to format a disk. It really is necessary that you start off with a totally blank disk so don't try to use a disk which has already got some files on it! This disk must be formatted with DOS 2.0. Do not try to use DOS 2.5 since Listing 1 only works with DOS 2.0. Now go back into Basic, and type in program listing 1, checking it as you go with TYPO III. Once this is done, save it onto your blank disk, and then RUN it. If all goes well then you should be presented with the All Done! message. Next go back into DOS 2.0 (by typing DOS), and select the L option (BINARY LOAD) from the menu, and when asked for the filename type in MDFDOS and press RETURN. After that you should press RETURN again. Now if you look in the top right hand corner of the screen you will see that instead the usual DISK OPERATING SYSTEM II VERSION 2.0s message, a new DISK OPERATING SYSTEM II VERSION 2.0TD message will be displayed, with the 2.0TD in inverse video. The TD stands for TransDisk, and is there to remind you that this DOS can ONLY be used with TransDisk game menu disks. WARNING: DO NOT TRY TO USE THIS DOS WITH ANY OTHER DISKS since you may corrupt them. Also do not save any other files onto the DOS 2.0TD disk except for Listings 2 and 3.

You should now save the DOS files onto your disk by using the H option from the menu (WRITE DOS FILES), and then clearly label this disk so that you don't inadvertently use it for anything other than TransDisk files.

If you have managed it this far then congratulations, you can now fully use TransDisk IV along with your 1050 drive.

```
CS 1 REM ####################################
UH 2 REM #          TRANSDISK FIX          #
ZW 3 REM #            Listing 1            #
XI 4 REM #       by Raphael Espino         #
SG 5 REM # ------------------------------- #
MC 6 REM # NEW ATARI USER - APRIL 1993     #
CY 7 REM ####################################
NN 8 REM
FE 120 RESTORE 1000:OPEN #1,8,0,"D:MDFDOS
    "
VG 130 READ D:IF D=-1 THEN 150
WX 140 PUT #1,D:GOTO 130
LH 150 CLOSE #1
HL 200 ? :? "ALL DONE!"
HM 1000 DATA 255,255,48,117,78,117,169,12
    5,141,10,17
SB 1010 DATA 169,178,141,49,31,169,174,14
    1,50,31,169
OB 1020 DATA 176,141,51,31,169,212,141,52
    ,31,169,196
EA 1030 DATA 141,53,31,96,224,2,225,2,48,
    117,-1
```

Listing 1

SALVAGING CORRUPT DISKS

The remaining problem now is what to do with those TransDisk IV disks which were corrupted with DOS 2.5. The best thing you can do is to format a blank disk using TransDisk IV and the same menu (XT or XL/XE) as the disk you want to fix. Then using your new DOS 2.0TD copy all the files from the corrupted disk to the new one, using the O option (DUPLICATE FILE). Do not use the J option (DUPLICATE DISK) since this would corrupt your new disk as well. Finally you can re-format your corrupted disk with TransDisk IV ready to save any new games on it.

GAMES WON'T WORK?

If, like me, you have found that some of the games listed in New Atari User's list of games that have been successfully

```
CS 1 REM ##################################
UH 2 REM #        TRANSDISK FIX           #
AV 3 REM #          Listing 2             #
XI 4 REM #      by Raphael Espino         #
SG 5 REM # ------------------------------ #
MC 6 REM # NEW ATARI USER - APRIL 1993 #
CY 7 REM ##################################
NN 8 REM
IW 110 ? "KPATIENCE PLEASE"
DU 120 CK=0:RESTORE 1000:Q=30000
VG 130 READ D:IF D=-1 THEN 150
KG 140 POKE Q,D:CK=CK+D:Q=Q+1:GOTO 130
QV 150 IF Q<30550 THEN ? "NOT ENOUGH DATA!":END
KQ 155 IF Q>30550 THEN ? "TOO MUCH DATA!":END
ZW 160 IF CK<>68781 THEN ? :? "ERROR IN DATA STATEMENTS, PLEASE CHECK":END
ZI 170 ? "K":? "INSERT BLANK CASSETTE AND PRESS RETURN"
BM 180 OPEN #1,8,128,"C:":POKE 850,11:POKE 852,48:POKE 853,117:POKE 856,38:POKE 857,2:I=USR(ADR("hhh□LV□"),16)
LP 190 CLOSE #1
HL 200 ? :? "ALL DONE!"
ZD 1000 DATA 0,5,128,4,192,3,169,60,141,2,211,169,0,133,10,169,204,133,11,169,0,133
JO 1010 DATA 203,133,205,169,192,133,204,169,64,133,206,160,0,177,203,145,205,200,208,249,230,206
EU 1020 DATA 230,204,240,12,165,204,201,208,208,237,169,216,133,204,208,231,8,120,173,14,212,72
GK 1030 DATA 169,0,141,14,212,173,1,211,41,254,141,1,211,169,192,133,206,169,64,133,204,177
NE 1040 DATA 203,145,205,200,208,249,230,204,230,206,240,12,165,206,201,208,208,237,169,216,133,206
HN 1050 DATA 208,231,104,141,14,212,40,169,70,133,203,169,5,133,204,169,0,133,205,169,204,133
W5 1060 DATA 206,177,203,145,205,200,208,249,230,204,230,206,165,204,201,6,208,239,160,0,177,203
OO 1070 DATA 145,205,200,192,165,208,247,169,192,133,205,169,3,133,206,169,60,133,203,169,5,133
QC 1080 DATA 204,160,9,177,203,145,205,136,16,249,24,96,173,1,211,41,254,141,1,211,96,0
WE 1090 DATA 169,0,141,47,2,141,200,2,169,12,141,82,3,162,16,32,86,228,169,3,141,82
MG 1100 DATA 3,169,92,141,84,3,169,205,141,85,3,169,4,141,90,3,169,128,141,91,3,162
XG 1110 DATA 16,32,86,228,169,7,141,82,3,169,255,141,88,3,141,89,3,169,128,141,84,3
GN 1120 DATA 169,4,141,85,3,162,16,32,86,228,48,3,24,144,51,192,136,240,47,169,0,133
JG 1130 DATA 77,169,50,141,200,2,173,88,3,133,203,173,89,3,133,204,169,12,141,82,3,162
GG 1140 DATA 16,32,86,228,169,255,141,252,2,173,252,2,201,33,240,130,201,62,240,22,208,243
IQ 1150 DATA 173,88,3,133,203,173,89,3,133,204,169,12,141,82,3,162,16,32,86,228,169,0
OZ 1160 DATA 141,77,0,169,210,141,200,2,165,204,74,133,206,169,0,133,205,56,165,203,229,205
QC 1170 DATA 133,207,165,204,229,206,133,208,169,255,141,252,2,169,3,141,82,3,169,8,141,90
ZY 1180 DATA 3,169,128,141,91,3,169,92,141,84,3,169,205,141,85,3,162,16,32,86,228,169
WE 1190 DATA 11,141,82,3,165,205,141,88,3,165,206,141,89,3,169,128,141,84,3,169,4,141
QW 1200 DATA 85,3,162,16,32,86,228,169,12,141,82,3,162,16,32,86,228,169,255,141,252,2
LW 1210 DATA 169,3,141,82,3,169,8,141,90,3,169,128,141,91,3,169,92,141,84,3,169,205
XX 1220 DATA 141,85,3,162,16,32,86,228,169,11,141,82,3,24,165,205,105,128,141,84,3,165
BU 1230 DATA 206,105,4,141,85,3,165,207,141,88,3,165,208,141,89,3,162,16,32,86,228,169
ZP 1240 DATA 12,141,82,3,162,16,32,86,228,169,114,141,200,2,169,0,208,252,67,58,155,0,-1
```

Listing 2

transferred will not work on your 1050 drive, then the most likely problem is that DOS 2.5 corrupted the game file. In this case you should try to pass the game(s) from cassette to disk again, but this time use an uncorrupted disk. Hopefully this time you should find that the games will work perfectly. One other note on copying files from one disk to another, and this applies to all disk drives, is that most DOS's including DOS 2.0TD, cannot copy the boot sectors, and on the 1050 drive not all the sectors above 908 can be copied. This is not a problem if you only want to copy game files, but if you want to copy the menu files from one disk to another then this can cause problems. Probably the best thing to do is to use a sector editor/copier or some similar program to copy these sectors from one disk to another.

OUT OF MEMORY PROBLEMS?

The other problem that I've set out to solve affects all unexpanded 800XL and 65XE owners (and indeed all 64K machines). If you own one of these machines then you will most likely know that there are some games which simply can't be transferred to disk due to lack of memory. If you do try to transfer one of these games, then after about 15 minutes or so of loading the game you are presented with the OUT OF MEMORY! message. Highly frustrating. You may think you can use the APPEND function on these games, but then you discover that the game comes with a small loader and a single very large game file, and it is this large file that simply won't fit. This therefore renders the APPEND option useless for these cassettes. What's worse some of the best games fall into this category - Zybex, Hardball, Fantastic Soccer, Kick Off, Cosmic Pirate amongst others.

So what can you do about it? Well wouldn't it be nice if you could somehow split this long file into two shorter ones, which could then be loaded with TransDisk IV? Well, that is exactly what program Listing 2 does. Perhaps I should warn you before going any further that it takes around an hour to pass each of these games onto disk in this way, but believe me, once you have passed them it is well worth it. Just think, you will now be able to load your favourite games in a minute or so, and no more BOOT ERRORS! Anyway let's get on with it. All 1050 owners should first modify DOS 2.0 as described above,

810 users should use standard DOS 2.0, and XF551 owners a TransDisk IV compatible double density DOS (SpartaDos or Mydos 4.0). Now type in Listing 2 checking it with TYPO III. Save it to disk, and then repeat the process for Listing 3. 1050 owners should save both these programs onto their DOS 2.0TD disk, all other drives can use any disk they want.

You will now need a blank cassette. Any good quality 60 or 90 minute cassette should do. If you are tempted to use a lower quality cassette, then remember that the better the cassette, the higher the chances of a successful transfer on your first attempt. The process is as follows:

Step 1: First insert your blank cassette into your recorder, rewind the cassette to the beginning, then wind it on a couple of counts to get it past the leader. LOAD and RUN Listing 2 from disk. You should now hear two beeps. Press down both the PLAY and RECORD buttons on your cassette recorder and then press the RETURN key. The program should now save itself to cassette. The first step is now complete. You need only do this step the first time round, after this the program will be saved on your cassette and you can then use it as many times as you wish.

Step 2: This step is only necessary if the game that you want to transfer has a loader routine. A loader is a short piece of code which loads in, (usually) displays a loading screen and then loads in the game itself from the cassette. If the game doesn't have a loader then skip this step. If it does then you should pass this loader onto a disk in the usual way. That is boot up with TransDisk IV, select the standard cassette read option, select a one stage load, and then when it has finished loading, save it to a disk using the Write option. The only difference is that this file should be saved to disk with a .LDR extension instead of the usual .OBJ extension. So if for example you were transferring Zybex, then you would save the loader onto your disk as ZYBEX.LDR. This file should be saved onto a TransDisk XL menu disk. If the game has more than one 'loader' before the main piece of code, then you should load them all in together (by using a multiple stage load, with as many stages as 'loaders'), and then save the file with a .LDR extension.

Note: It is a good idea to reset the cassette counter to 000 before you start transferring the loader, and then make a note of the counter when the loader has been transferred, just in case a loading error occurs later on. If this is the case, then you should rewind the cassette back to the beginning, reset the counter, and then wind it on to the noted value, ready for your next attempt.

Step 3: Put the cassette onto which you saved Listing 2 in your deck, rewind it to the beginning, switch your computer AND disk drive off (after removing the disk first!) and then press PLAY and switch your COMPUTER ONLY back on again while holding down both the START and OPTION keys, and then press RETURN. The program should now load from cassette. Once it has loaded you should hear one beep, and then the cassette should stop. If this doesn't happen, then rewind and try again. If after a few goes you still haven't got it working, then Listing 2 has most likely not been saved properly, so you must repeat step 1 again.

Note: Even if you do have to repeat step 1, you do not have to repeat step 2. Step 2 need only be done once for each game that you wish to transfer.

Step 4: Now wind your blank cassette on a couple of counts, then replace your cassette with the cassette game you wish to transfer and press PLAY and then RETURN. The game will now start to load. If at any time the cassette stops and the screen turns RED, then a loading error has occurred. If this happens then you will need to rewind the cassette (see note on step 2 if the game has a loader), and repeat steps 3 and 4 again. If however the cassette stops, you get a GREEN screen and you hear two beeps then the load was successful.

Step 5: You should now insert your blank cassette, reset the cassette counter back to 000, depress both the PLAY and RECORD keys on your deck and press RETURN. The game will now be saved onto your blank cassette in two halves. Once the first half has finished saving, the cassette will stop and you will hear another two beeps. When this happens write down the value of the cassette counter and press RETURN. The second half will now be saved.

Step 6: You have now split the large file into two smaller parts. This new version of the game, saved in two halves on your cassette is totally useless on its own and if you do attempt to boot it then you will simply get a boot error. Now you need to boot up with TransDisk IV and rewind your cassette until the counter reads 000. Then using the Standard cassette read option from the menu, pass the first half onto a TransDisk XL menu disk in the normal way, specifying a one stage load. When saving this file use a .1 extension instead of a .OBJ extension. Then repeat process for the second half, only this time use a .2 extension. Again if you were transferring Zybex you would save the first file as ZYBEX.1 and the second one as ZYBEX.2. If you get an error when loading the first half, then rewind the cassette back to 000 and repeat this step again. If you get an error while loading the second half then rewind the cassette back to the counter value that you wrote down in step 5 and try again. If you get several cassette read errors, always in the same place when using TransDisk then the most likely problem is that the file has not been saved properly, if this happens then you should go back to step 3, and start again.

Note: All files should be saved under the same filename, with only the extender changing. So in the Zybex example the files should be saved as ZYBEX.LDR, ZYBEX.1 and ZYBEX.2 for the loader (if there is one), first and second halves respectively. If you don't use this convention then Listing 3 will NOT work. As another example Hardball could be saved as HARDBALL.LDR, HARDBALL.1 and HARDBALL.2.

Step 7: If you have made it this far, then the hardest part has been done and all that is left is to link the files back together again. This is considerably easier and much less error prone than splitting them up was. This is where Listing 3 comes in. You should now re-boot, LOAD Listing 3 from disk and RUN it. You will now be asked for a file name. If you want to see the disk directory then you should press RETURN on its own at this stage. Otherwise you should type in the same file name that you used to save the files to disk, but WITHOUT the extension. So if you were transferring Zybex, the files for which were saved as ZYBEX.LDR, ZYBEX.1, ZYBEX.2, you would simply enter ZYBEX, no D: is necessary, but it will still work if you do include one. For simplicity, only one disk drive is supported, so people who own two drives will still have to swap disks like the rest of us. You will now be asked if the game had a loader. If it has then press Y otherwise press N. All you have to do now is follow the prompts. These prompts will ask you to insert the right disks at the right times. The source disk(s) are those onto which you saved the split files (ZYBEX.LDR, ZYBEX.1 AND ZYBEX.2 in the example), and these will be referred to by the name of the file. So you will be asked to insert, for example, the ZYBEX.LDR disk or the ZYBEX.2 disk or whatever. The destination disk is the disk on which you want the final working version of the game to be saved on. Both the source and destination disk must be TransDisk IV menu disks. The source and destination files may be on the same disk, or they may all be on different disks, it is entirely up to you. You must however have enough free sectors on the destination disk to fit the whole joined file in. As a guide you will need to add up the number of sectors taken up by the loader (if there is one), and the first and second halves of the game. So if for example the length of the files were as follows:

ZYBEX.LDR	= 16 SECTORS
ZYBEX.1	= 198 SECTORS
ZYBEX.2	= 197 SECTORS
TOTAL	= 411 SECTORS

```
CS 1 REM #################################
UH 2 REM #        TRANSDISK FIX          #
BU 3 REM #          Listing 3            #
XI 4 REM #     by Raphael Espino         #
SG 5 REM # ----------------------------- #
MC 6 REM # NEW ATARI USER - APRIL 1993 #
CY 7 REM #################################
NN 8 REM
JE 10 GOTO 5000
RP 100 REM LOAD FILE
AD 105 ? :? :? "INSERT ";F$;" DISK":? "AN
   D PRESS ANY KEY◘":GOSUB 1010
FX 110 TRAP 160:CLOSE #1:OPEN #1,4,0,F$
IN 120 POKE 850,7:POKE 852,224:POKE 853,4
   6:POKE 856,0:POKE 857,100
QR 125 I=USR(ADR("hhh▣LV◙"),16)
MO 130 NL=PEEK(856):NH=PEEK(857):CLOSE #1
   :GOTO 198
CH 160 TRAP 810:IF PEEK(195)=136 THEN 130
PK 165 GOTO 810
AN 198 RETURN
YA 200 REM SAVE FILE
RS 203 IF  NOT LDR AND  NOT SC THEN N=(NL
   +NH*256)-132:NH=INT(N/256):NL=N-NH*256
EA 204 IF  NOT LDR AND SC THEN N=(NL+NH*2
   56)-3:NH=INT(N/256):NL=N-NH*256
VN 205 ? :? :? "INSERT DESTINATION DISK":
   ? "AND PRESS ANY KEY◘":GOSUB 1010
BK 207 F$(LEN(F$)-2)="OBJ"
VQ 210 TRAP 810:IF SO THEN CLOSE #2:OPEN
   #2,8,0,F$:SO=0
IN 220 POKE 866,11:POKE 868,224+A2:POKE 8
   69,46:POKE 872,NL:POKE 873,NH
OO 225 I=USR(ADR("hhh▣LV◙"),32)
OY 230 IF SC THEN CLOSE #2
AO 298 RETURN
RP 300 REM FILENAME
CV 310 INPUT I$
YI 315 IF LEN(I$)=0 THEN NM$="":GOTO 398
JP 320 IF LEN(I$)>1 THEN IF I$(2,2)=":" T
   HEN NM$=I$:GOTO 350
IJ 330 NM$(1,2)="D:":NM$(3)=I$
JN 350 FOR Q=1 TO LEN(NM$):IF NM$(Q,Q)=".
   " THEN NM$(Q)="":POP :GOTO 398
JU 355 NEXT Q
AP 398 RETURN
YC 400 REM GET FILE NAMES
ZT 410 ? "K":? "INPUT FILENAME":GOSUB 300
WN 415 IF NM$="" THEN GOSUB 1200:GOTO 410
QE 420 ? :? "LOADER?(Y/N)":GOSUB 1010:LDR
   =(K=89)
AQ 498 RETURN
EW 800 REM ERRORS
DT 810 TRAP 810:CLOSE #1:CLOSE #2:? "ERRO
   R-";PEEK(195):GOTO 5010
QL 1000 REM WAIT FOR KEY PRESS
WI 1010 POKE 764,255:CLOSE #3:OPEN #3,4,0
   ,"K:":GET #3,K:CLOSE #3:RETURN
GS 1100 REM CONTROL
TR 1105 A2=0:O=1:SO=1:SC=0:? "K"
QU 1107 IF LDR THEN F$=NM$:F$(LEN(F$)+1)=
   ".LDR":GOSUB 100:GOSUB 200:LDR=0
FH 1110 F$=NM$:F$(LEN(F$)+1)=".1  ":O=1
HS 1115 GOSUB 100:GOSUB 200
HY 1120 F$=NM$:F$(LEN(F$)+1)=".2  ":O=1:A
   2=3:SC=1
HE 1130 GOSUB 100:GOSUB 200
CI 1198 RETURN
GW 1200 REM DIRECTORY
SB 1210 TRAP 810:? "K":? "DIRECTORY:":? :
   CLOSE #1:OPEN #1,6,0,"D:*.*":TRAP 1250
SE 1220 INPUT #1;D$:? D$:GOTO 1220
RL 1250 CLOSE #1:? :? "ANY KEY TO CONTINU
   E":GOSUB 1010
CK 1298 RETURN
ZM 5000 DIM F$(15),NM$(15),D$(18),I$(15)
WI 5010 GOSUB 400
XG 5020 GOSUB 1100
YV 5030 ? :? "ALL DONE!"
KT 5040 ? :? "RUN AGAIN?(Y/N)":GOSUB 1010
   :IF (K=89) THEN RUN
FG 5050 END
```

Listing 3

you would need at least 411 free sectors on your destination disk.

If you have the appropriate number of free sectors or more left on your destination disk then you are okay, otherwise you will need another destination disk that has enough free sectors on it. One thing to note is that the loader, and the two halves of the game do not all have to be on the same source disk, each file can be on a separate disk if you wish. If both the source and destination are the same disk, then there is no need to swap disks when prompted, just press RETURN. The destination file will now be saved with an .OBJ extender and can be run in the normal way. If at any time an error occurs, you will be informed of this. If at any time you make a mistake and you want to restart the program then stop the program with the BREAK key and type RUN (and press RETURN).

Note: Listing 3 will not delete the .LDR, .1 or .2 files, so if you want to get rid of them after they have been linked, then you will have to delete them with a DOS.

NOT SO COMPLICATED

The above procedure can seem quite complicated at first, but you will soon get the hang of it. In fact most of the stuff is quite obvious (like press RETURN or press PLAY and RECORD!). If however you do wish to have a couple of 'practice' runs, then you can use a cassette game which has a very short loading time, and which you have preferably already transferred to TD4 in the usual manner. Using a short cassette for practising has the advantage that it will normally take only 10 to 15 minutes to go through the whole procedure, and it gives you confidence to tackle the longer games.

TECHNICAL NOTES

The cassette loader program (Listing 2) is rather crude since by necessity it has to take up very little memory, therefore leaving as much as possible for the game. It even switches the screen off to gain an extra 1K of memory, and the main code itself is actually hidden in the RAM under the O.S. ROM's, this means that it should be possible to pass a game even if it uses up all 48K of RAM.

Listing 3 should only be used with Atari Basic and not Turbo Basic. If you do try and use it with Turbo Basic then it will lock up. The reason for this is that the program assumes that certain areas of memory will be empty, which will be the case in Atari Basic but not in Turbo Basic. Sorry, but I wanted to keep the listing as short and as simple as possible, and besides there is no real gain from using this program in Turbo Basic anyway.

Finally, you will only be able to pass standard cassettes with these programs. Any cassettes that have been saved in the non-standard format will not load into Listing 2. I have not yet come across any non-standard format cassettes which can't be transferred in the normal way on a 64K machine, but there may be some out there.

I hope that you can now transfer all those problem tapes.

SLIME BLASTERS

Steve Lakey concludes his series by letting you in on the programming secrets behind his games

The final listing in this series is a game called SLIME BLASTERS and, although simple, it demonstrates the use of the three machine-code routines contained within the INVADERS game, published in the last issue. If you have the Invaders listing then you can save yourself some time by LISTing out lines 24100-24248 and using these as the basis of this issue's listing. The listing is heavily REMed and should be fairly easy to understand, so type it in and don't forget to save a copy before you RUN it.

HOW TO PLAY

The game involves two players, using both joysticks, who move ships along the edges of the display, blasting globules of space-slime. The first ship to reach the target score, set before playing, wins!

Once you have finished playing the game, you may want to use the routines that move the ships, sound the effects and move the missiles, in your own program. If so then read on.

HOW TO USE THE ROUTINES

The sprite (known on the Atari as a player) and missile routines work in conjunction with the PMG (Player Missile Graphics) system. Before calling the routines you must:-

1 Store all data for the player images and sound effects in memory - Lines 140 - 415
2 Set up your display (Playfield) - Lines 700 - 728
3 Before each game, clear a page at 1536 and store movement table - Lines 730 - 732
4 Set up the PMG system - Lines 750 - 755
5 If you are using the sound routine, enter a line equal to line 795

THE SPRITE ROUTINE

To use the sprite routines you must have some sprite shape data in memory. The computer interprets this data in the same way as GRAPHICS 0 font data, the difference being that sprite data can be more than eight bytes long.

The format for the sprite call is:-

```
CALL=USR (SPRITE, SPRITE, SPR, PMB, IMG, FLN, FNM,
ATP, ASP, DIR, LNX, LNY, STX, STY, YMN, YMX, PSX,
PSY, CLN, CVL)
```

The parameters in this call are as follows

SPRITE - Range: *Not Valid*
This is the address of the routine, which can be stored anywhere in available RAM. As you can see, it has to be entered twice at the beginning of the calling command

SPR - Range: *0 - 3*
This is the sprite number, equal to the player number

PMB - Range: *See text*
This is the base page of your PMG area (PMG AREA/256). If you use a different PMG area to the one in Listing 6, then it must be on a 2K boundary

IMG - Range: *Not Valid*
This is the address of the image data for this particular sprite. If there is more than one frame to your sprite, then each frame should be the same size and be placed in memory, one after the other

FLN - Range: *1 - 64*
This holds the length of a frame, even if there is only one

FNM - Range: *1 - 255*
This holds the number of frames

ATP - Range: *See text*
This is the Animation Type:-
0 = Wrap around animation
(e.g. 1, 2, 3, 4 - 1, 2, 3, 4 - 1, 2, 3, 4)
1 = Rebound animation
(e.g. 1, 2, 3, 4 - 4, 3, 2, 1 - 1, 2, 3, 4)
Adding a 2 to ATP will direct the routine to test joystick 2, as long as joysticks have been enabled with DIR

ASP - Range: *1 - 255*
This is the Animation Speed, 1=Fast 255=Very Slow

continued on page 28

```
LU 100 REM *****************************
XW 105 REM *     'SLIME BLASTERS'      *
DR 110 REM *     By Stephen Lakey      *
JC 115 REM * ------------------------- *
JB 120 REM *        LISTING 6          *
JE 125 REM * ------------------------- *
TY 130 REM * NEW ATARI USER - APR 1993 *
MP 135 REM *****************************
NL 139 REM INITIALISE
JT 140 N0=0:N1=1:N2=N1+N1:N3=N2+N1:G0=168
   7:HIT=1788:CONSOL=53279:COLUMB=85:ROW=
   84:MARGIN=82:CURSOR=752:HEX=32500
CT 142 AUDCTL=53768:REM Audio Control
BJ 145 POKE MARGIN,N0:POKE 710,N0:? CHR$(
   125);"Initialising..."
UV 150 DIM HX$(100),CL$(17),SHIP(12),EFF(
   6),FOE(12),PLYR(N3),DIE(N3)
BA 152 RESTORE 17000:FOR I=N0 TO 73:READ
   A:POKE HEX+I,A:NEXT I:REM Hexadecimal
   To Memory Mover
BW 154 CL$="hh▜?h▜>█♥}♥▜>HPZ}♦":REM Memory
    Clearence Routine
JR 160 SPRITE=33920:MEM=SPRITE:LN=24100:L
   =684:GOSUB 23800:REM Store Sprite Rout
   ine
ZL 165 MISSILE=33200:MEM=MISSILE:LN=24200
   :L=676:GOSUB 23800:REM Store Missile R
   outine
AY 170 NOISE=32600:MEM=NOISE:LN=24230:L=3
   75:GOSUB 23800:REM Sound Routine
CF 185 ? CHR$(125);"Initialising..."
ZT 299 REM STORE SHIP DATA
GO 300 PMB=144:RESTORE 31000:C=PMB*256:I=
   N0:SHIP(I)=C
BT 305 READ A:IF A=-N2 THEN I=I+N1:SHIP(I
   )=C:GOTO 305:REM Set Sprite Address
KG 310 IF A=-N1 THEN 350
WA 315 POKE C,A:C=C+N1:GOTO 305:REM Store
    Data
PE 349 REM STORE SOUND EFFECT DATA
PC 350 SND=143*256:RESTORE 30500:C=SND:I=
   N0:EFF(I)=C
HJ 355 READ A:IF A=-N2 THEN I=I+N1:EFF(I)
   =C:GOTO 355:REM Set Effect Address
HN 360 IF A=-N1 THEN 400
BP 365 POKE C,A:C=C+N1:GOTO 355:REM Store
    Data
YV 399 REM STORE SLIME DATA
XT 400 ALN=152*256:RESTORE 30750:C=ALN:I=
   N0:FOE(I)=C
ZJ 405 READ A:IF A=-N2 THEN I=I+N1:FOE(I)
   =C:GOTO 405:REM Set Frame Address
JJ 410 IF A=-N1 THEN 700
XB 415 POKE C,A:C=C+N1:GOTO 405:REM Store
    Data
SA 700 REM SET UP PLAYFIELD
JJ 705 GRAPHICS 0:POKE 708,102:POKE 709,8
   :POKE 711,232:POKE 710,0:DLIST=PEEK(56
   0)+PEEK(561)*256
MJ 710 POKE DLIST+3,70:POKE DLIST+6,6:REM
    Line 0 To GRAPHICS 1(ANTIC 6)
PQ 715 POSITION N0,N0:? "PLAYER 1     PLAY
   ER 2"
IW 718 POKE MARGIN,N0:POKE CURSOR,N1:REM
   Set Left Margin And Cursor Off
SP 720 ? "────────────────────────────────
   ──────────";
SP 722 FOR Y=N1 TO 20
XY 724 FOR STAR=N0 TO 4:X=1+INT(RND(N0)*3
   8):POKE COLUMB,X:? ".";:NEXT STAR:?
MX 726 NEXT Y
TN 728 ? "────────────────────────────────
   ──────────";
RQ 729 REM SELECT TARGET SCORE
UN 730 TARGET=100:X=USR(ADR(CL$),1536):RE
   M Clear A Page(256 Bytes) At Page 6(*2
   56)=1536
NK 731 RESTORE 732:FOR I=1671 TO 1671+15:
   READ A:POKE I,A:NEXT I:REM Movement Ta
   ble
NH 732 DATA 0,1,1,1,0,255,255,255,255,255
   ,0,1,1,1,0,255
XM 734 IF PEEK(CONSOL)=3 THEN IF TARGET<1
   000 THEN TARGET=TARGET+50:REM Check Op
   tion?
QH 736 IF PEEK(CONSOL)=5 THEN IF TARGET>1
   00 THEN TARGET=TARGET-50:REM Check Sel
   ect
WN 738 POSITION 4,10:? "TARGET SCORE(SELE
   CT\OPTION):";TARGET;" "
AB 740 IF PEEK(CONSOL)<>6 AND STRIG(N0) A
   ND STRIG(N1) THEN 734:REM Check START
   And Both Triggers
KO 742 POSITION 4,10:? "
                          "
DS 749 REM SET PLAYER MISSILE GRAPHICS
KU 750 PMBASE=54279:REM You Store PMG Bas
   e Page Here
KF 751 DMACTL=559:REM Direct Memory Acces
   s Control(Enable PMG And Alters Displa
   y)
WF 752 HPOSN0=53248:REM Store Player/Miss
   ile Horizontal Location In 53248-53255
PL 754 WIDTH=53256:GRACTL=53277:REM Playe
   r Width:Graphics Control(Enables PMG)
BG 755 PCOLR=704:PRIOR=623:REM Colour Reg
   isters And Priority Select Register
JV 756 NMIEN=54286:GRAF=53261:REM Non-Mas
   kable Interupt Enable And Player/Missi
   le Data Register 53261-53265
XG 760 FOR C=PMB*256+768 TO PMB*256+1792
   STEP 256:X=USR(ADR(CL$),C):NEXT C:REM
   Clear PMG Area
AK 765 POKE PMBASE,PMB:POKE DMACTL,62:POK
   E GRACTL,N3:REM System On
BP 770 POKE PCOLR,8*16+6:POKE PCOLR+N1,52
   :REM Set Ship Colours
RH 775 POKE PRIOR,16+1:REM Missiles Colou
   r In PEEK(711)+Srites Have Priority Ov
   er Background
LV 790 SCOR1=N0:SCOR2=N0:POSITION 20,N0:?
    SCOR1;"      ":POSITION 32,N0:? SCOR2;
   "    "
FF 795 FOR C=N0 TO N3:SOUND C,N0,N0,N0:DI
   E(C)=N0:NEXT C:REM Initialise Sound An
   d Explode Flag
AF 800 SPR=N0:REM Sprite(PLAYER)=0
UN 801 IMG=SHIP(SPR):REM Image Address
MT 802 FLN=11:FNM=4:REM Frame Length And
   Quantity
YO 803 ATP=N0:ASP=6:REM Animation Type An
   d Speed
IS 804 DIR=128+3:REM Direction=Use Joysti
   ck+No Vertical Movement
RF 805 LNX=60:LNY=188:YMN=20:YMX=220:REM
   Movement Box(LEFT:RIGHT:TOP:BOTTOM)
NR 806 STX=N3:STY=N1:REM Horizontal & Ver
   tical Step(Alters Speed)
CE 807 PSX=120:PSY=202:REM Initial Positi
   ons
AE 809 CLN=128:CVL=N0:REM Collision Switc
   h(OFF) And Value
XF 810 GOSUB 20000:REM Set Bottom Ship(Ga
   me Player 1)
DT 850 SPR=N1:IMG=SHIP(SPR):REM Next Spri
   te And Image
TP 855 ATP=N0+N2:PSY=58:REM Set Animation
    Type + N2(Use Joystick 2)
NY 860 GOSUB 20000:REM Set Top Ship
KB 899 REM SET UP MISSILES
TQ 900 MSL=N0:IMG=SHIP(N2):REM Access Mis
   sile Image For Missile 0
YN 901 FLN=17:SWT=N3:REM Set Frame Length
    And Switch To On
JO 902 MOD=128+16+N1:REM Set 128(Stop Wra
   p Around) 16(SpeedX2) 1(Access Startin
```

continued

SLIME BLASTERS

```
  g position Indirectly)
PS 903 CLN=N2:CVL=12:REM Collision Switch
    And Check Value
XS 904 LNX=N0:LNY=134:REM Horizontal And
   Vertical Movement Lengths
RM 905 PSX=1764:PSY=1768:REM Initial Posi
   tion Fetched Indirectly From These Add
   resses Corresponding To Player 1
EO 906 DIR=128:REM 128(Wait For Trigger 1
   ) + 0(Move Up)
EU 907 STP=GO:REM One Of The Four Address
   es At GO Will Be Cleared On A Collisio
   n Causing A Sprite To SToP.
PU 908 OFX=N0:OFY=253:REM No Horizontal O
   ffset,A Vertical Offset
VO 909 GOSUB 20200:REM Bottom Ship Left M
   issile
YD 910 MSL=N2:IMG=SHIP(N3):REM Missile 2
   And Next Data Image Address
GX 912 OFX=6:GOSUB 20200:REM Bottom Ship
   Right Missile
WI 920 MSL=N1:IMG=SHIP(4)
JM 922 PSX=1765:PSY=1769
ET 924 OFX=N0:OFY=N0
LJ 926 DIR=64+4:REM 64(TRIGGER 2) + 4(Mov
   e Down)
PX 930 GOSUB 20200:REM Top Ship Left Miss
   ile
YB 940 MSL=N3:IMG=SHIP(5)
TB 945 OFX=6:GOSUB 20200:REM Top Ship Rig
   ht Missile
NC 949 REM SET UP SOUND
MT 950 POKE AUDCTL,N0:NUM=N0:SPEED=N1:X=U
   SR(NOISE,NOISE,SPEED,NUM,EFF(NUM)):REM
    Top Ship Laser
WC 955 NUM=N1:X=USR(NOISE,NOISE,SPEED,NUM
   ,EFF(NUM)):REM Bottom Ship Laser
CS 960 NUM=N2:X=USR(NOISE,NOISE,SPEED,NUM
   ,EFF(NUM)):REM Slime Explode
XH 999 REM PLAY LOOP
CC 1000 GOSUB 5000:REM Space Slime
XA 1050 GOSUB 4700:REM Explode Slime?
XP 1055 IF DIE(N2)<>N0 OR DIE(N3)<>N0 THE
   N 1498
GZ 1100 IF SCOR1>=TARGET OR SCOR2>=TARGET
    THEN GOSUB 5500:GOSUB 5600:GOSUB 1500
   :GOTO 730
PD 1498 GOTO 1000
IA 1499 REM INDICATE WINNER
GC 1500 POSITION 6,10:? "PLAYER ";
FN 1505 IF SCOR1>=TARGET THEN ? "1";:GOTO
    1515
AZ 1510 IF SCOR2>=TARGET THEN ? "2";
IJ 1515 ? " WINS!! (PRESS START)"
TX 1520 ON PEEK(CONSOL)<>6 GOTO 1520:RETU
   RN :REM Wait For START Key
ZW 4499 REM HANDLE SCORING
VC 4500 SCOR1=SCOR1+10:POSITION 20,N0:? S
   COR1;"  "
SE 4550 GOTO 4610
KT 4600 SCOR2=SCOR2+10:POSITION 32,N0:? S
   COR2
KG 4610 DIE(SPR)=N1:REM Set Explode Flag
BL 4615 RETURN
SI 4699 REM HANDLE SLIME EXPLOSION
IA 4700 FOR SPR=N2 TO N3:REM Check Slime
   Sprites
UD 4702 IF DIE(SPR)<>N0 THEN 4750:REM Exp
   lode Wanted?
AS 4704 NEXT SPR:RETURN
JY 4750 IMG=FOE(DIE(SPR)):REM Access Corr
   ect Frame
GD 4752 IF DIE(SPR)=N1 THEN POKE EFF(N2),
   N1:REM Turn On Sound Effect
XN 4755 YMN=56:YMX=216:REM Minimum Vertic
   al View Coordinates
KT 4760 CLN=128:CVL=N0:REM Collision Dete
   ction Off
BL 4765 FLN=15:FNM=1:REM Data Addesss,Fra
   me Length,No. Of Frames
JU 4770 STX=N0:STY=N0:LNX=N0:LNY=N0:DIR=N
   0:REM Routine Will Just Plot Not Move
NC 4775 PSX=PEEK(1764+SPR):PSY=PEEK(1768+
   SPR):REM Use current Positions
UH 4778 IF DIE(SPR)>N1 THEN POKE WIDTH+SP
   R,N1:REM Double Width
TF 4779 POKE PCOLR+SPR,14:REM Turn White
VF 4780 GOSUB 20000:REM Plot Frame
PF 4785 DIE(SPR)=DIE(SPR)+N1:ON DIE(SPR)<
   4 GOTO 4704
SR 4790 X=USR(ADR(CL$),PMB*256+1024+(SPR*
   256)):REM Clear Sprite Strip
TF 4792 POKE EFF(N2),N0:REM Sound Effect
   Off
NH 4795 POKE HIT+SPR,N0:DIE(SPR)=N0:GOTO
   4704:REM Clear Explode Indicator
VQ 4999 REM PLOT SPACE SLIME
YD 5000 FOR SPR=N2 TO N3:REM Slime Is Spr
   ites 2 & 3
AS 5001 IF DIE(SPR)=N0 AND (PEEK(HIT+SPR)
   =N1 OR PEEK(HIT+SPR)=N3) THEN GOSUB 45
   00:REM Player 1 Score
PS 5002 IF DIE(SPR)=N0 AND (PEEK(HIT+SPR)
   =N2 OR PEEK(HIT+SPR)=4) THEN GOSUB 460
   0:REM Player 2 Score
NS 5003 IF DIE(SPR)=N0 AND PEEK(GO+SPR)=N
   0 AND PEEK(HIT+SPR)=N0 THEN GOSUB 5100
   :REM New Slime
AF 5004 NEXT SPR:RETURN
GW 5099 REM NEW SPACE SLIME
VT 5100 YMN=56:YMX=216:REM Minimum Vertic
   al View Coordinates
KK 5105 CLN=128:CVL=N0:REM Collision Dete
   ction Off
YK 5110 IMG=FOE(N0):FLN=15:FNM=3:REM Data
    Addesss,Frame Length,No. Of Frames
NC 5115 ATP=N0:ASP=10:REM Animation Type,
   Animation Speed
IG 5120 DIR=1+INT(RND(N0)*8):REM Directio
   n
WH 5125 ON DIR GOSUB 6100,6150,6200,6250,
   6300,6350,6400,6450
RO 5130 X=USR(ADR(CL$),PMB*256+1024+(SPR*
   256)):REM Clear Sprite Strip
LZ 5135 POKE PCOLR+SPR,160+(SPR*N2):REM S
   et Colour
NM 5138 DIE(SPR)=N0:POKE WIDTH+SPR,N0:REM
    Normal Width
AD 5140 GOSUB 20000:REM Set Sprite
AU 5150 RETURN
MU 5499 REM TURN OFF SPRITE ROUTINES
MP 5500 POKE NMIEN,N0:REM Turn O.S Off
NW 5505 POKE 548,138:POKE 549,194:REM Tur
   n Off Sprite Routine
QR 5510 POKE 546,226:POKE 547,192:REM Tur
   n Off Missile Routine
HL 5515 POKE 538,N0:REM Sound Off
BC 5520 FOR C=N0 TO N3:SOUND C,N0,N0,N0:N
   EXT C:REM Clear Residue Sound
OP 5525 POKE NMIEN,64:REM O.S On
AW 5530 RETURN
RJ 5599 REM CLEAR PMG SYSTEM
EG 5600 POKE GRACTL,N0:REM PMG Off
JN 5605 FOR C=N0 TO 4:POKE GRAF+C,N0:NEXT
    C:REM Clear Player and Missile Stripe
   s From Screen
MW 5610 FOR C=N0 TO 7:POKE HPOSN0+C,N0:NE
   XT C:REM Clear Sprite & Missile Horizo
   ntal Positions
US 5615 POKE DMACTL,34:REM Standard Displ
   ay
AV 5620 RETURN
AV 6099 REM SLIME MOVEMENT 1
UG 6100 LNX=185:LNY=N0:REM Horizontal And
    Vertical Movement Lengths.
```

```
DM 6110 PSX=212:PSY=70+INT(RND(N0)*115):R
   EM Horizontal And Vertical Starting Po
   sitions.
RI 6115 STX=N2:STY=N0:REM STEP Values
ZR 6120 DIR=6:REM Actual Direction
AS 6140 RETURN
XA 6149 REM MOVEMENT 2
JX 6150 LNX=185:LNY=N0
UI 6155 PSX=40:PSY=70+INT(RND(N0)*115)
LJ 6160 STX=N2:STY=N0
XI 6165 DIR=2
BB 6170 RETURN
YI 6199 REM MOVEMENT 3
XY 6200 LNX=180:LNY=100
JA 6210 PSX=44:PSY=60
MI 6215 STX=N2:STY=N1
WO 6220 DIR=3
BO 6245 RETURN
YO 6249 REM MOVEMENT 4
BJ 6250 LNX=168:LNY=100
XZ 6255 PSX=204:PSY=60
MD 6260 STX=N2:STY=N1
YO 6265 DIR=5
CD 6295 RETURN
ZW 6299 REM MOVEMENT 5
YA 6300 LNX=180:LNY=100
YZ 6302 PSX=44:PSY=195
LQ 6310 STX=N2:STY=N1
WN 6315 DIR=1
BQ 6345 RETURN
AC 6349 REM MOVEMENT 6
BL 6350 LNX=168:LNY=100
PM 6352 PSX=204:PSY=195
MS 6354 STX=N2:STY=N1
YQ 6360 DIR=7
CF 6395 RETURN
BK 6399 REM MOVEMENT 7
WL 6400 LNX=N0:LNY=190
LB 6402 PSX=48+INT(RND(N0)*142):PSY=40
LO 6410 STX=N0:STY=N2
XP 6414 DIR=4
BS 6445 RETURN
BQ 6449 REM MOVEMENT 8
XA 6450 LNX=N0:LNY=190
XY 6455 PSX=48+INT(RND(N0)*142):PSY=200
MD 6460 STX=N0:STY=N2
CQ 6465 DIR=N0
CH 6495 RETURN
VC 16999 REM HEXADECIMAL TO MEMORY MOVER
CZ 17000 DATA 104,104,133,204,104,133,203
   ,104,104,133,205,104,133,207,104,133,2
   06,160,0,132,209,177,206,56,233
IF 17002 DATA 48,201,16,144,2,233,7,24,10
   ,10,10,10,133,208,200,177,206,56,233,4
   8,201,16,144,2,233
EZ 17004 DATA 7,24,101,208,133,208,152,72
   ,164,209,165,208,145,203,230,209,104,1
   68,200,196,205,208,204,96
PQ 19999 REM CALL SPRITE ROUTINE
VF 20000 X=USR(SPRITE,SPRITE,SPR,PMB,IMG,
   FLN,FNM,ATP,ASP,DIR,LNX,LNY,STX,STY,YM
   N,YMX,PSX,PSY,CLN,CVL):RETURN
FL 20199 REM CALL MISSILE ROUTINE
XI 20200 X=USR(MISSILE,MISSILE,PMB*256,MS
   L,SWT,MOD,OFX,OFY,DIR,CLN,CVL,LNX,LNY,
   PSX,PSY,IMG,FLN,STP,HIT):RETURN
OF 23799 REM STORE MACHINE CODE
NW 23800 RESTORE LN:? CHR$(125);"Reading
   Block At Line ";LN
AO 23802 READ HX$:X=USR(HEX,MEM,LEN(HX$),
   ADR(HX$)):L=L-(LEN(HX$)/2):MEM=MEM+(LE
   N(HX$)/2):ON L>N0 GOTO 23802:RETURN
WP 24099 REM SPRITE MOVEMENT ROUTINE
MP 24100 DATA 68688D8606186869C98D8506900
   3EE8606AD2502CD8606F018A203A9009D97069
   DFC06CA10F7AE8606AC8506A907205CE468
HP 24102 DATA 6818AA0AA868688D980668999D0
   668999C0668689DA40668689DA80668689DAC0
   668689DB0069DB406A9009DB8069DBC069D
MB 24104 DATA FC0668689DC00668689DC4069DC
   80668689DCC069DD00668689DD40668689DD80
   668689DDC0668689DE00668689DE4069DEC
FP 24106 DATA 06187DC4069DC40668689DE8069
   DF006187DCC069DCC068A9DF40668683006180
   A0A7DF4069DF40668689DF806A9019D9706
PE 24108 DATA 60A203BDF4063017A8BDF806D90
   4D0D00EBC9706F009989DFC0688989D9706CA1
   0E1E88E1ED0E004F00ABD9706D008E8E004
TG 24110 DATA D0F24C62E4188A0AA8B99C0685C
   BB99D0685CCBCB806F01018A5CB7DA40685CB9
   002E6CC1888D0F018A90085CD8A69046D9B
TJ 24112 DATA 0685CEBCE80684CFA000F002D0B
   49848BDC006300CA5CFDDE006B00EDDDC06900
   968A848B1CBA4CF91CDE6CF68A8C898DDA4
JY 24114 DATA 06D0D9F002D0D3BDA806C901F05
   5DEB006D050BDB4069DB006BDAC0629FDD013F
   EB806BDB806DDA806D038A9009DB8061890
AI 24116 DATA 30BDBC06D01CFEB806BDB806DDA
   806D020DEB806C901F005DEB806A9019DBC06D
   00FDEB806100AA9019DB806A9009DBC06BD
LX 24118 DATA E4069D00D0189002D09718BDC00
   63066BDD40685CFD0059DC806F01EBDC806F01
   9DEC806BCC00618B98706F003FEEC067DE4
WU 24120 DATA 069DE406C6CFD0E2BDD80685CFD
   0059DD006F01EBDD006F019DED006BCC00618B
   98F06F003FEF0067DE8069DE806C6CFD0E2
CE 24122 DATA BDD006D00ABDC806D005A9009D9
   706E8D092BDAC064AA8BDC006197802A8C90FF
   0ED29034903F02C98482901D013BCD806BD
RK 24124 DATA DC06DDE806F019DEE80688D0F2F
   011BCD806BDE006DDE806F006FEE80688D0F26
   8A898290C490CF0B4982904D013BCD406BD
TJ 24126 DATA C806DDE406F0A4DEE40688D0F2F
   09CBCD406BDD006DDE406F091FEE40688D0F2F
   089
EN 24199 REM MISSILE MOVEMENT
AT 24200 DATA 68688D0106688D0006688D03066
   88D02066868AA68689D040668689D080668689
   D0C0668689D100668689D14068A9D180618
QH 24202 DATÁ 0AA8686830061B0A0A7D18069D1
   80668689D1C0668689D20069D240668689D280
   69D2C066899310699390668993006993806
KL 24204 DATA 689941069949066899400699480
   668995106689950066868 9D5806688D5D06688
   D5C06688D5F06688D5E0618AD0106AAAD00
JI 24206 DATA 0669A4A89001E818A906205CE46
   0A203BD0406D006CA10F84C5FE4C903D05C8A1
   80AA8BD24069D2006BD2C069D2806B93806
GY 24208 DATA 993006B939069931 06B94806994
   006B94906994106BD08062901F028B9300685C
   BB9310685CC84CDA000B1CBA4CD993006B9
AS 24210 DATA 400685CBB9410685CCA000B1CBA
   4CD994006A9019D04061890029095BC180684D
   13053B900D03D1C06F04B48A003684884CD
IJ 24212 DATA 4AC6CD10FB9034A5D1D0098A186
   9019960069022AD5D06F00B85CCAD5C0685CBA
   90091CBAD5F06F00D85CCAD5E0685CB8A18
KU 24214 DATA 690191CBA9049D04068810BE68A
   9008D1ED0189002909FBD0406C902F022C904F
   023BD140629C0F017A000A9803D1406D001
HQ 24216 DATA C818B98402F007A9039D0406D0D
   5A9029D04068A180AA8AD03066903 85CCB9300
   685CDB9400685CFA5CF187D100685CBA5CD
MR 24218 DATA 187D0C069D04D08A180AA8B9500
   685D0B9510685D1BC5806889848A5CB48A5CC4
   8189002D0B4B1D0D008B1CB3D6406189002
UH 24220 DATA 11CB91CB8810EDBD0806297E4A8
   5CB48BD1406290785CC18BD0406C904D008A90
   09D20069D2806BD2806F01FA4CCA5CF1879
HO 24222 DATA 8F0685CFD00CBD08061007A9009
   D2806F0E3DE2806C6CB10DC6885CB189002D09
   FBD2006F01FA4CCA5CD1879870685CDD00C
OE 24224 DATA BD08061007A9009D2006F0E3DE2
   006C6CB10DC8A180AA8A5CF994006A5CD99300
   6BD2806D01EBD2006D019A9039D04066885
SM 24226 DATA CC6885CB68A8BD640631CB91CB8
```

continued ☛

SLIME BLASTERS

```
   810F6300368686818A901D0A1
FV 24229 REM SOUND GENERATOR
JB 24230 DATA 686885CC6885CB6868A071C891C
   B6868AA0A6941A8C86891CB886891CB8A6949A
   8A90191CB18A5CB693A8D2802A5CC69008D
5A 24232 DATA 2902A9018D1A02601890140000
   0000000000000000000000000000000000A20
   0AD280285CBAD290285CC188A6903A8B1CB
RN 24234 DATA F01138E90191CB18E8E004D0E2A
   9328D1A02608A180A6907A8B1CB85CDC8B1CB8
   5CEF0E3188A690FA8B1CB85CF189002D0D5
QS 24236 DATA A0A3A90191CB48A000B1CDC902D
   03768A90448A5CFC901D004A90485CFA5CB48A
   5CC48C8B1CD85CBC8B1CD85CCC8B1CD85D1
MZ 24238 DATA A000B1CB85D06885CC6885CBA0A
   3A5D191CBA5D0C901F00668C5CFF0864868A4C
   FB1CDD00DGA18690FA8A90191CBD09CD09A
FU 24240 DATA C901D017C8B1CD85CF84D08A186
   913A8A5CF91CBA4D0189054D0E348A90085CF6
   8C902F008C903D02DA90185CF9848E6CCA0
50 24242 DATA 0FA5CF91CBC6CC68A8C8B1CD85C
   F84D08A186913A8B1CB180AA8A5CF9900D2A4D
   0189017C904D0BFC8B1CD85CF84D08A1869
J5 24244 DATA 03A8A5CF91CB18A4D0C884D08A1
   8690FA8A5D091CBA901D09C
UP 30499 REM BOTTOM SHIP LASER SOUND
MM 30500 DATA 2,132,2,0,1,0,2,70,3,170,2,
   65,2,60,3,168,2,60,2,55,3,166,2,50,2,4
   5,3,164,2,40,3,162,3,160,0,-2
FO 30502 REM TOP SHIP LASER SOUND
DA 30505 DATA 2,133,2,0,1,1,2,100,3,170,2
   ,95,2,90,3,168,2,85,2,80,3,166,2,75,2,
   70,3,164,2,65,3,162,3,160,0,-2
WL 30510 REM SLIME EXPLODE SOUND
FH 30515 DATA 0,1,2,2,200,3,140,4,10,2,18
   0,3,138,4,10,2,160,3,136,4,8,2,140,3,1
   32,4,4,2,115,3,130,4,2,3,128,4,35,0,-1
FZ 30749 REM SPACE SLIME IMAGE
ED 30750 DATA 0,0,0,0,104,238,255,127,254
   ,63,51,0,0,0,0
PD 30755 DATA 0,0,0,0,68,92,254,127,254,1
   26,51,0,0,0,0
OB 30760 DATA 0,0,0,0,4,124,255,254,127,2
   39,45,0,0,0,0,-2
LV 30765 REM SLIME EXPLOSION IMAGE
CC 30770 DATA 0,0,0,0,40,60,28,56,28,52,0
   ,0,0,0,0,-2
RM 30775 DATA 0,0,68,102,38,0,0,0,0,100,3
   8,98,0,0,0,-2
YS 30780 DATA 130,195,67,0,0,0,0,0,0,0,0,
   0,194,67,193,-1
CF 30999 REM BOTTOM SHIP DATA
JM 31000 DATA 129,153,189,255,255,102,0,0
   ,0,0,0
BE 31002 DATA 129,24,189,255,255,102,0,68
   ,0,0,0
CG 31004 DATA 129,153,189,255,255,102,0,3
   4,68,0,0
SS 31006 DATA 129,24,189,255,255,102,0,68
   ,34,68,0,-2
TA 31010 REM TOP SHIP DATA
ZR 31015 DATA 0,0,0,0,0,102,255,255,189,1
   53,129
GQ 31018 DATA 0,0,0,68,0,102,255,255,189,
   24,129
BV 31020 DATA 0,0,68,34,0,102,255,255,189
   ,153,129
EJ 31022 DATA 0,68,34,68,0,102,255,255,18
   9,24,129,-2
MO 31024 REM MISSILE DATA
DF 31050 DATA 2,2,2,2,2,0,0,0,0,0,0,0,0,0
   ,0,0,0,-2
LS 31055 DATA 16,16,16,16,0,0,0,0,0,0,0,0
   ,0,0,0,0,-2
GT 31060 DATA 0,0,0,0,0,0,0,0,0,0,0,0,8,8
   ,8,8,8,-2
QT 31065 DATA 0,0,0,0,0,0,0,0,0,0,0,0,64,
   64,64,64,64,-1
```

DIR - Range: *See text*

A value from 0-7

(0=Up 1=Up/Right 2=Right 3=Down/Right
4=Down 5=Down/Left 6=Left 7=Up/Left)

Using a value of 128 would Select Joystick Control (See ATP), add to this:-

+1 (No upwards movement)
+2 (No downwards)
+4 (No leftwards movement)
+8 (No rightwards movement)

These values can be combined (e.g. 1+2 = 3, No Vertical Moves)

LNX - Range: *1 - 255*

This is the length to move horizontally. When using joystick control, this equals the coordinate at which the sprite will stop, when moving left

LNY - Range: *1 - 255*

This is the length to move vertically. When using a joystick, it is equal to the coordinate at which the sprite will stop, when moving right

STX - Range: *1 - 16*

This is a horizontal stepping command (e.g. 1 moves one step at a time, 2 moves two steps at a time), in effect, it changes the speed

STY - Range: *1 - 16*

Vertical Stepping. This value should not exceed the number of zeros that you have included at either end of your image data, if it does, then your sprite will not clear itself properly

YMN - Range: *32 - 212*

The sprite will not be plotted, unless it is higher than this vertical coordinate. When using a joystick, this becomes the coordinate at which the sprite will stop, when moving upwards

YMX - Range: *32 - 212*

The sprite will not be plotted, unless it is lower than this vertical coordinate. When using a joystick, this becomes the coordinate at which the sprite will stop, when moving downwards

In SLIME BLASTERS YMN and YMX were used to limit the slime to the area between the horizontal bars

PSX - Range: *See text*

This is the initial horizontal position (48-200). A value higher than 255 will tell the routine to get the position from this memory location (e.g. 1650 will tell the routine to look into location 1650 for the position)

PSY - Range: *See text*

This is the initial vertical position (32-200). Values higher the 255 react in the same way as PSX

CLN - Range: *See text*

If this is equal to 128, then no collision detection will take place. Values should equal:-

0, Player to Playfield Collision

2, Player To Player Collision (See TECHNICAL INFORMATION)

CVL - *See text*

This is the value that the routine compares the collision registers with.

For playfield collisions the value should be:-

1 (Collision with Colour 1, Loc. 708)
2 (Collision with Colour 2, Loc. 709)
4 (Collision with Colour 3, Loc. 710)
8 (Collision with Colour 4, Loc. 711)

These values can be added together. For example, in the INVADERS game, alien collisions with the shield were detected with a value of 11, which equals collisions with 1, 2 and 8.

For player collisions the value should be:-

1 (Collision with Player 0)
2 (Collision with Player 1)
4 (Collision with Player 2)
8 (Collision with Player 3)

These values can also be added together. Once a collision is detected, depending on which sprite it is, one of the four locations at 1687-1690 is cleared, stopping the sprite. Also, one of the four locations at 1788 - 1791 is set to 1, indicating a hit. In listing six, Location 1687 is assigned the variable GO, whilst 1788 is assigned the variable HIT.

Setting STX, STY, LNX and LNY to zero will cause the sprite to be plotted and immediately disabled, turning the routine into a plotting routine. This is used to plot explosion frames, where horizontal coordinates can be found at locations 1764-1767 and vertical coordinates at 1768-1771. These should be assigned to PSX and PSY (See lines 4750-4795).

THE MISSILE ROUTINE

The format for the missile command is:-

CALL=USR (MISSILE, MISSILE, PMB*256, MSL, SWT, MOD, OFX, OFY, DIR, CLN, CVL, LNX, LNY, PSX, PSY, IMG, FLN, STP, HIT)

The parameters in this call are as follows

MISSILE - Range: *Not Valid*
See text for SPRITE

PMB*256 - Range: *Not Valid*
This is the PMG base page x 256, equal to the PMG area

MSL - Range: *0 - 3*
This is the missile number

SWT - Range: *Not Valid*
This should be set to 3

MOD - *See text*
A speed value, in the range 1 - 32, should be multiplied by two, then if you wish, add :-

+128 = Stops missile moving off the top or bottom, then reappearing
+1 = The routine treats PSX & PSY as memory locations

Remember, the higher the speed the more zeros there must be in the missile image data

FX - Range: *0 - 255*
This offset is added to the initial horizontal position

OFY - Range: *0 - 255*
This offset is added to the initial vertical position

DIR - *See text*
A value in the range of 0-7 (See DIR in sprite routine explanation), then if you wish, add one of these values:-

+128 = Wait for trigger 1
+64 = Wait for trigger 2

CLN - Range: *See text*
A value of 128 disables collision detection, whilst a 0 tests for Missile to Playfield collision and a 2 tests for Missile to Player collision (See TECHNICAL INFORMATION)

CVL - Range: *See text*
Values tested for are identical to the CVL in the sprite routine explanation. The relevant HIT location will hold the missile number (1-4), that registered the collision, useful for scoring (See lines 5000 - 5004)

LNX - Range: *1 - 255*
The length to move horizontally

LNY - Range: *1 - 255*
The length to move vertically

PSX - Range: *See text*
This is the initial horizontal coordinate of the missile (48-192), but if a 1 has been added to MOD, then the value is treated as a memory location. For example, by setting it to one of the players horizontal positions (1764-1767), the missile will appear to have been fired from the player (See Lines 900-945)

PSY - Range: *See text*
Identical to PSX except for vertical player locations, held in 1768-1771, and a normal position range of 32-208

IMG - Range: *See text*
This is the address of the missile image data. Depending on the missile that you are writing data for, the values are different, each of the missiles are two bits wide and possible data values are:-

MISSILE 0 : 0, 1, 2, 3
MISSILE 1 : 0, 4, 8, 12
MISSILE 2 : 0, 16, 32, 48
MISSILE 3 : 0, 64, 128, 192

FLN - Range: *1-32*
This is the length of the image data

STP - Range: *See text*
This value is ignored when it is zero, else it is assumed to be the address of the four bytes, from which one is cleared on a collision

HIT - Range: *See text*
This value is ignored when it is zero, else it is assumed to be the address of the four bytes from which one is set to the missile number that caused the collision

If you are detecting a missile to playfield collision, then STP and HIT are ignored. When a collision with the playfield occurs, one of the four locations starting at 1632, will be set to the missile number (1-4) that caused it. After collisions, missile horizontal coordinates can be found at 1584, 1586, 1588 and 1590, whilst vertical co-ordinates can be found at 1600, 1602, 1604 and 1606, for missiles 0 to 3 respectively.

Missile collision with:

Colour 1 (Loc. 708) = 1632
Colour 2 (LOC. 709) = 1633
Colour 3 (Loc. 710) = 1634
Colour 4 (Loc. 711) = 1635

All four missiles use the most recently entered STP and HIT values. In short, you cannot have different STP and HIT values for each missile.

TECHNICAL INFORMATION

As the sprite routine stands, the collision detection works in EXCLUSIVE mode. As an example, a CVL value of 5, working in Sprite To Playfield mode, would not stop the sprite until it had hit both, colours 1 (1) and 3 (4).

You may wish the routine to work in NON-EXCLUSIVE MODE which would, using the values in the above example, stop the sprite if it had hit either colour 1 (1) or colour 3 (4).

As an example of the problems encountered using EXCLUSIVE mode, if you played the INVADERS game you probably noticed your ship did not always die when it collided with an alien. This was because ship collision detection was carried out in BASIC, as using the routine would have meant that in order for the ship to die, it would have had to collide with all three aliens. Using NON-EXCLUSIVE mode would have cured this, but would have also meant that the aliens would have exploded on hitting one of the buildings, as I wanted them to appear to move in front of the buildings, EXCLUSIVE mode was used.

To use the sprite routine with NON-EXCLUSIVE mode, which stops the sprite if any of the conditions tested for are true, enter this line after the routine has been placed in memory:-

```
[LINE NUMBER] POKE [ROUTINE ADDRESS]+212, 57:
POKE [ROUTINE ADDRESS]+214, 240
```

To restore EXCLUSIVE MODE, which only stops the sprite if all conditions tested for are true, use:

```
[LINE NUMBER] POKE [ROUTINE ADDRESS]+212,
217:POKE [ROUTINE ADDRESS]+214, 208
```

The missile routines always operate in NON-EXCLUSIVE mode.

Locations :
53248 - 53251 are Missile To Playfield Registers
53252 - 53255 are Player To Playfield Registers
53256 - 53259 are Missile To Player Registers
53260 - 53263 are Player To Player Registers

A zero stored in 53278 clears all collision registers, but should not be used if the sprite and missile routines are detecting collisions.

If you are going to test the above locations from BASIC, when also using the sprite and missile routines, then remember that they can be unreliable, as in the INVADERS game.

There are a couple of disadvantages to using the sprite and missile routines:-

1 None of Page 6 (1536 - 1791) is available, except for (1644-1664)
2 Both immediate and deferred VBIs are used

SOUND EFFECT ROUTINE

This routine can be used to play up to four sound effects simultaneously, is totally relocatable, runs in the vertical blank and is table driven. The routine utilizes the timer 2 interrupt and its vector.

To call the routine:-

```
CALL=USR (NOISE, NOISE, SPEED, NUMBER, TABLE)
```

NOISE - Range: *Not valid*

This is the address of the routine and is entered twice

SPEED - Range: *1 - 255*

The lower the value the quicker the sound is played. All effects take the last speed entered

NUMBER - Range: *0 - 3*

This is the number of the effect

TABLE - Range: *Not valid*

This is the address of the command table, the structure of which is:-

1st entry: This should equal 0, 1 or 2

0 and 1 are treated as a switch. 0 stops the effect, whilst 1 starts the effect from the beginning. If the effect is currently playing when a 0 is stored as the first value, it will stop after reaching the end of the table. 2 tells the routine to treat the next three values in the table as follows:-

1st value: Memory location low-byte

2nd value: Memory location high-byte

To convert a memory location into low-byte/high-byte format you use:- HIGH=INT (ADDRESS/256): LOW =ADDRESS-HIGH*256

Variables cannot be used in data statements, therefore the high/low values should be calculated prior to storing them in DATA lines.

3rd value : Effect plays when this value is found in the previously defined memory location

An example of using 2 as the first value is:-

```
[LINE No. ] DATA 2, 132, 2, 0, ....
```

With its second and third entries, it references, 132+ (2x256) =644. Location 644 holds the value for trigger one, which when pressed returns a zero, hence the 4th entry.

Next comes the actual sound command values:-

0 - Should be put at the end of every command list
1 - Should be followed by a channel number, 0 - 3
2 - Should be followed by a pitch value, 0 - 255
3 - Should be followed by a volume/distortion value:-

Volume = Range: 0-15

+ Distortion = 0 (Steam like sounds) or 32 (Machine gun like sound) or 64 (Labouring engine) or 128 (Waterfall like sound) or 160 (Pure tones) or 192 (Airplane sounds)

The values in brackets are only a guideline, which vary with the pitch value

4 - Should be followed by a delay value, 1 - 255

Using this information with the last example:-

```
[LINE No. ] DATA 2, 132, 2, 0, 1, 0, 2, 100, 3, 170, 4, 50, 3, 168,
3, 164, 3, 160, 0
```

Starting with entry five:-

1, 0	Use sound channel zero
2, 100	Set pitch value to one hundred
3, 170	Use pure tone (160), then add a volume of ten
4, 50	Hold the note for a count of fifty
3, 168	Quieten it
3, 164	And again
3, 160	Silence
0	Tells the routine to begin again

Once this line had been POKEd into memory and called, the routine would wait for trigger one, then the effect would be repeated until trigger one was released. If you don't want any residue sound, then you must always silence your effect at the end of the table. Remember to give each new effect, up to a maximum of four, a different sound channel, otherwise one effect will interfere with another.

Well, that's all there is, I hope you have found the past six listings useful and I look forward to seeing your efforts in NEW ATARI USER.

ERROR MESSAGES

You don't really understand those error messages do you? Gordon F. Hooper thinks he's got them cracked though

All you eight-bit owners out there will be thrilled to learn that I have written a new error code list to add on to your Atari manual. This is basically a translation of the Error Messages found in the back of your manual that you refer to when you or the computer make a mistake. These are the numbers displayed on-screen such as "Error 137", which when you look it up is "Truncated Record - This error typically occurs when the record being read is larger than the maximum record size specified in the call to CIO. (BASIC's maximum record size is 119 bytes.)" Huh? Maybe you don't really understand that but with my new list of error messages you are going to be able to understand at least some of the computers intractable mysteries.

Error 2 - Insufficient Memory
You are too ignorant to ever understand the intricacies of a computer.

Error 3 - Value error
You fail to display the social principles or standards necessary to be considered a functioning member of the human race.

Error 4 - Too Many Variables
No wonder you can't organize your life.

Error 5 - String Length Error
The length of twine you cut is too short to use as a substitute for your shoelace.

Error 6 - Out Of Data
This is the nineties. You're still living in the sixties. (Peace and love, brothers and sisters.)

Error 12 - Line Not Found
Just for a change, the computer is acting stupid, not you.

Error 20 - Device Number Error
First you must learn how to count before numbering your devices.

Error 130 - Nonexistent Device
It is necessary for you to remember that you are only dreaming of getting a printer in the future. It isn't there yet, Bozo.

Error 138 - Device Time-out
Your printer needs to interface with the coach.

Error 141 - Cursor Out Of Range
If the cursor is off the screen, how the hell am I expected to find it?

Error 142 - Serial Bus Data Frame Overrun
I haven't quite figured this one out yet, but I suspect it has something to do with people lying flat (VERY flat) on the pavement with lots of blood around.

Error 144 - Device Done Error
Another one of the few which you can blame on the computer.

Error 167 - File Locked
This keeps all you nosy people out.

Error 171 -Invalid POINT
You won't win many debates using these.

Error 199 - SU Error
SU stands for Stupid User. This is the source of 99.5% of computer errors.

WHAT'S ALL THAT PRINTED STUFF IN THE BOX?

It is a proven fact that when users complain of not being able to understand a program, 9 times out of 10 they have not even bothered to read the docs. You'll have to trust me on this one, but the one reason documentation is written is to explain the program. The manufacturer didn't pay someone big bucks to do all that writing for no reason.

I am one of the worst offenders in this regard. It brings back frustrating memories of assembling various items. I have the habit of not reading the instructions until I have done something which is un-doable. Why I don't read them in the first place and avoid the problem is one of life's unexplained mysteries.

It is simply an unstated fact of computer life that computer users will not read docs until after they have sat and screamed obscenities at the machine for periods of up to half-an-hour. After they have that out of their systems, they will sit down and look up their problems in the manuals' list of contents and turn to the page indicated to find out what they're doing wrong. We computer users like to think we're more intelligent than the general population so you would think we would have enough brains to learn how to do something before attempting it with no idea of how or what it's supposed to do. But then you would also think we'd be smart enough to play a game without becoming addicted to it, and we've all played games until the wee hours of the morning at one time or another, haven't we?

Speaking of lack of grey matter, why is it that it takes a major disaster such as having typed for 8 hours straight and forgetting to write it to disk or make a back-up before the new user remembers that the number one rule for computing is ALWAYS MAKE A BACK-UP. Remember this the next time you wish to flush your computer down the toilet.

PICK A CARD

Allan J. Palmer explains how to solve some problems if your Home Filing Manager cards are playing up

YOUR CARD IS ...?

The NAU Mailbag column received the following letter from Nigel Ludlow of Radstock, Bath:

"I use Atari's Home Filing Manager quite a lot. I find it handy for addresses, etc. Today, when I loaded it, I imagine it partially crashed, as I found some of the information missing on most 'cards'. For instance, the name and first line of the address have 'disappeared' and the rest of the address has moved up into its place. When this happened, it also seemed to write a number of blank cards, something that is supposed to be impossible.

I wasn't that worried as I thought I could examine the disk sector by sector and retrieve the information manually, utilising 'Disk Editor' (Page 6 PD Library disk 5). However, it seems Atari, in their infinite wisdom, have built in enough protection, even on a DATA disk, that I am unable to get around.

Does anyone have any ideas on how I can circumvent this and get at my data?"

I was surprised at Nigel's comment about "protection", so I decided to investigate further in order to provide an answer in the Mailbag column. It soon became apparent that the answer was going to be a long one which would take up a whole column, so my reply to Nigel has become this article.

TAKE A CARD, ANY CARD

I booted up my copy of Page 6's PD 'Disk Editor' and proceeded to examine the Home Filing Manager (HFM) manual that is held as a HFM data file on the reverse side of the HFM disk that was supplied with 1050 packages. The results of my investigations revealed that HFM data disks do not use the standard Atari DOS disk format with the directory starting in sector 361 and each 128-byte data sector having 125 bytes of data with linkage information in the last 3 bytes. Instead, on a HFM data disk, sector 348 contains an index to the cards within the file. Using the 'Disk Editor' utility, the hexadecimal display of sector 348 for the HFM manual begins as follows:

```
byte
000     29  00  04  80  DD  00  0A  00
008     10  00  14  00  1A  00  20  00
016     26  00  2C  00  32  00  37  00
etc.
```

A PAIR TO OPEN

Each pair of bytes holds a value in Least Significant Byte/ Most Significant Byte (LSB/MSB) format. Each single byte can hold a value up to 255, so to hold values greater than 255, the number is broken down into two parts MSB (the number divided by 256 and rounded down to the nearest whole number) and LSB (the original number minus the LSB) - multiply the MSB by 256 and add the LSB to get the value. The Atari stores the LSB first in a pair followed by the MSB.

So, in sector 348, the first two bytes hold the number of 'cards' in the file, in this case $0029 (hexadecimal) which equals decimal 41. Each of the next 41 pairs of bytes holds the start sector of each card in its filed sequence. Thus, the first 'card' starts in sector $0004 (4) (I'm ignoring the '8' in byte 4 for the moment - I'll get back to it later), the second card' starts in sector $00DD (221), the third 'card' starts in sector $000A [10], and so on.

Next, going to sector 4 (the start of our first 'card' in this file), the 'Disk Editor' hexadecimal display ends with the following line:

```
byte
......
......
120     04  00  05  00  00  00  00  00
```

Here, we find that bytes 120 & 121 hold the value of $0004 [4] - the start sector of this 'card', and bytes 122 & 123 hold $0005 [5] - the next sector of this 'card's' data. Moving onto sector 5, we find that it's 'Disk Editor' display ends with:

```
byte
......
......
120     04  00  06  00  00  00  00  00
```

showing that the next data sector for this card is $0006 [6]. We can follow this chain on through sectors 7, 8 and 9 in sequence to where we find sector 9 ends with:

```
byte
......
......
120     04  00  00  00  00  00  00  00
```

This time bytes 122 & 123 contain $0000 [0] signifying the end of this 'card'.

WHAT'S IN THE CARDS?

Fine, we can now find where each 'card' is stored. Interpreting the data is slightly more tricky - and this may be where Nigel thought the data was "protected". Lower case characters are easily recognised in the 'Disk Editor' display, but upper case and special characters aren't. The reason for this I realised, after consulting 'COMPUTE!'s Third Book of Atari', is that the 'card' data is not stored using ATASCII characters (which are readily decipherable in the 'Disk Editor' display), but rather using the ICODE (Internal Code) values for each character. This value is the number that must be POKEd into screen memory to display the character on the screen; the number also represents the order of the character within character set memory.

MARKED CARDS

I said that I'd explain why in sector 348 the actual value held for the start sector of the first data 'card' is $8004, not just $0004. This setting of the top-most bit is the means which indicates that a 'card' is 'marked', which results in the paper clip being displayed on screen when the particular 'card' is retrieved.

Hopefully, the above should help Nigel to retrieve his data - it sounds as though the sector index and/or linkage has got screwed up somewhere, resulting in the start sector of each 'card' being offset from the true start position.

REVERSED CARDS

After carrying out the above investigations, I found a program in the June 1988 issue of "Atari User" (Vol. 4/no 2) by Gordon Sinclair which converts HFM files to standard Atari DOS text files which can be read by a word processor program. Gordon did not describe the HFM file format in the text accompanying the article, but by working my way through the BASIC statements, I found the results of my studies described above were confirmed. Additionally, Gordon's program reveals that bytes 104 to 122 of sector 360 on a HFM data disk contain the file title. He checks for the presence of a HFM data disk by reading bytes 43 to 45 of sector 347 - a HFM disk should have the hex values E0 00 3F here. If the HFM file contains more than 63 cards, the index in sector 348 continues into sector 349. Within a card data sector, 38-chrcter lines of text are held in bytes 2 to 39, 42 to 79, and 82 to 119 (byte numbering starts from 0 as per the 'Disk Editor' display).

MORE TRICKS

In looking through other references, I found that Derryck Croker (a long-time Atari Classic owner) produced a utility that allows you to print only a certain number of lines from HFM 'cards', set the number of blank spaces between cards, and set printer control codes - this utility appeared in issue 13 of '8:16' the magazine produced by the Bournemouth and Poole Atari User Group (BaPAUG).

Is there anyone who can provide us with any more details on HFM? Are there any utilities waiting to be published which give us additional facilities for this useful Atari product?

Some Basic Notes on ... GRAPHICS

Ann O'Driscoll introduces you to the various graphics modes so you can begin to write your own programs

MENU SCREENS IN GRAPHICS 1 AND 2

Graphics modes 1 and 2 use five colour registers numbered 0 to 4 (memory locations 708 to 712) and they can cater for half the character set - i.e. 64 characters - at a time. Each of the 64 available characters can be printed in any of 4 colours, with the 5th register (register no. 4; location 712) being used for the background colour. The different colour registers can be accessed by the way the string is printed on the screen - capitals for register 0, inverse capitals for register 2, etc. You can also use CHR$ and COLOR to select a character and register. These take the form PRINT CHR$(X) or COLOR X followed by a PLOT command where "X" is the ASCII number.

The relationship between colour registers, print type and ASCII numbers is shown in Table 1.

To change a colour in a register from its default value, just use the command SETCOLOR n,C,L where "n" is the register number (0-4), "C" is the colour you want (0-15) and "L" is the luminance you want (0-14). Alternatively, you can POKE the shadow memory location for the register with (16*C)+L where "C" and "L" are colour and luminance values as before and 16 is a constant.

TABLE 1: CHARACTER COLOUR REGISTERS IN GRAPHICS 1 AND 2

REGISTER No. AND LOCATION	ASCII No.	PRINT TYPE
0 (708)	32- 95	Capitals
1 (709)	0- 31	Lower case
1 (709)	96-127	Lower case
2 (710)	160-223	Inverse caps
3 (711)	128-159	Inverse lower
3 (711)	224-255	case

THE PROGRAM

The listing shows a selection of menu screens which show the different ways colours can be used and characters printed in Graphics 1 and 2. All the screens use the START and SELECT console keys to move between and pick menu options.

Menu One: The menu options, which are held as DATA statements, are read and printed on the screen at rows 5, 8, 11 and 14 (LINE 1030). The CHR$(10) in LINE 1020 produces an asterisk using the lower case register 1 (location 709). This sets up the screen display.

You press SELECT to move the asterisk. The variable RR holds the current row number of the asterisk and R holds its previous position. LINE 1080 blanks out the old asterisk (by printing a space) before printing the new one at the updated location.

Menu Two: The menu option names are printed out on rows 3, 4, 5 and 6 (LINE 2020). The variable R defines the row number for the "current" or highlighted name. This is printed in a different colour to the other names and is updated when you press SELECT. LINE 2075 sends the program off on a different (one line) subroutine depending on the value of R:- This prints the "current" name in lower case (register 1; location 709) and puts the previously highlighted name back into capitals (register 0; location 708).

The "COLOR 35" in LINE 2030 identifies a "#" sign using register 0 (location 708). This is printed around the screen using the PLOT and DRAWTO commands.

Menu Three: Normally the 64 characters accessible in Graphics 1 and 2 cover the first two pages of the ROM character set. These comprise ASCII numbers 32 to 95, which means you don't get control characters or lower case letters. You can access the second half of the character set by using POKE 756,226 - This directs the computer to page 226 in ROM for its characters. Menu Three does this (LINE 3000).

```
EI 1 REM ******************************
CT 2 REM *   MENUS IN GRAPHICS 1 & 2   *
MF 3 REM *       by Ann O'Driscoll      *
EB 4 REM * --------------------------- *
CI 5 REM *  NEW ATARI USER - APR 1993  *
EN 6 REM ******************************
NM 7 REM
OF 120 DIM A$(15):BRK=300:M1=1000:M2=2000
   :M3=3000:M4=4000:QUIT=5000
AZ 190 GOTO M1
LA 299 REM -- DISABLE BREAK/ETC --
SZ 300 POKE 752,1:POKE 82,0:POKE 16,64:PO
   KE 53774,64:RETURN
TF 999 REM  MENU 1    1000 >>>
ET 1000 GRAPHICS 1:GOSUB BRK
NS 1010 POKE 708,75:POKE 709,175:POKE 710
   ,0
SW 1020 R=5:POSITION 6,0:? #6;"menu one":
   POSITION 1,R:? #6;CHR$(10)
PG 1025 ? CHR$(125);"    SELECT  YOUR OPT
   ION AND  START "
ST 1030 RESTORE 1040:FOR N=1 TO 4:READ A$
   :POSITION 2,N*3+2:? #6;"[";N;"] ";A$:N
   EXT N
JW 1040 DATA MENU TWO,MENU THREE,MENU FOU
   R,QUIT PROGRAM
XR 1050 IF PEEK(53279)<>5 AND PEEK(53279)
   <>6 THEN 1050
CI 1060 IF PEEK(53279)=6 THEN 1090
LN 1070 FOR D=1 TO 15:SOUND 0,20,10,10:NE
   XT D:SOUND 0,0,0,0:RR=R+3:IF RR>14 THE
   N RR=5
WR 1080 POSITION 1,R:? #6;" ":POSITION 1,
   RR:? #6;CHR$(10):R=RR:GOTO 1050
FI 1090 ON R=5 GOTO M2:ON R=8 GOTO M3:ON
   R=11 GOTO M4:ON R=14 GOTO QUIT
PX 1999 REM  MENU TWO   2000 >>>
OB 2000 GRAPHICS 18:GOSUB BRK
UG 2010 POKE 708,54:POKE 709,138:POKE 710
   ,0:POKE 711,28
YL 2020 POSITION 4,3:? #6;"menu one":? #6
   ;"    MENU THREE":? #6;"    MENU FOUR"
   :? #6;"    QUIT PROGRAM"
MP 2030 R=3:COLOR 35:PLOT 1,0:DRAWTO 17,0
   :DRAWTO 17,8:DRAWTO 1,8:DRAWTO 1,0:POS
   ITION 4,0:? #6;" menu two "
MG 2040 POSITION 0,10:? #6;"PUSH select T
   O PICK PUSH start TO BEGIN";
ZO 2050 IF PEEK(53279)<>5 AND PEEK(53279)
   <>6 THEN 2050
DL 2060 IF PEEK(53279)=6 THEN 2090
TJ 2070 R=R+1:IF R>6 THEN R=3
QO 2075 POSITION 4,R:GOSUB 2080+R:FOR D=1
    TO 25:SOUND 0,30,10,12:NEXT D:SOUND 0
   ,0,0,0:GOTO 2050
EO 2083 ? #6;"menu one":POSITION 4,6:? #6
   ;"QUIT PROGRAM":RETURN
ET 2084 ? #6;"menu three":POSITION 4,3:?
   #6;"MENU ONE":RETURN
TS 2085 ? #6;"menu four":POSITION 4,4:? #
   6;"MENU THREE":RETURN
XO 2086 ? #6;"quit program":POSITION 4,5:
   ? #6;"MENU FOUR":RETURN
RN 2090 ON R=3 GOTO M1:ON R=4 GOTO M3:ON
   R=5 GOTO M4:ON R=6 GOTO QUIT
YP 2999 REM  MENU THREE   3000 >>>
HC 3000 GRAPHICS 2:GOSUB BRK:POKE 756,226
UY 3010 POKE 708,0:POKE 709,14:POKE 710,0
   :POKE 711,236
GP 3020 R=3:POSITION 4,0:? #6;"menu three
   ":POSITION 2,R:? #6;CHR$(18)
PI 3025 ? CHR$(125);"   SELECT  YOUR OPT
   ION AND  START "
EM 3030 RESTORE 3040:FOR N=1 TO 4:READ A$
   :POSITION 4,N+2:? #6;A$:NEXT N
TX 3040 DATA menu one,menu two,menu four,
   quit program
BL 3050 IF PEEK(53279)<>5 AND PEEK(53279)
   <>6 THEN 3050
EO 3060 IF PEEK(53279)=6 THEN 3090
DR 3070 FOR L=50 TO 0 STEP -2:SOUND 0,L,1
   0,10:NEXT L:RR=R+1:IF RR>6 THEN RR=3
UD 3080 POSITION 2,R:? #6;" ":POSITION 2,
   RR:? #6;CHR$(18):R=RR:GOTO 3050
QG 3090 ON R=3 GOTO M1:ON R=4 GOTO M2:ON
   R=5 GOTO M4:ON R=6 GOTO QUIT
YN 3999 REM  MENU FOUR   4000 >>>
NN 4000 GRAPHICS 17:GOSUB BRK
ZL 4010 POKE 708,220:POKE 709,108:POKE 71
   1,44
LW 4020 COLOR 45:PLOT 1,0:DRAWTO 19,0:DRA
   WTO 19,17:DRAWTO 1,17:DRAWTO 1,1
YH 4025 R=3:POSITION 5,0:? #6;" menu four
   "
SF 4030 POSITION 5,3:? #6;"MENU ONE":POSI
   TION 5,6:? #6;"MENU TWO":POSITION 5,9:
   ? #6;"MENU THREE"
WY 4040 POSITION 5,12:? #6;"END PROGRAM":
   POSITION 2,19:? #6;"select THEN start"
   :CC=139:GOSUB 4100
DI 4050 IF PEEK(53279)<>5 AND PEEK(53279)
   <>6 THEN 4050
FR 4060 IF PEEK(53279)=6 THEN 4090
IL 4070 CC=32:GOSUB 4100:CC=139:R=R+3:IF
   R>12 THEN R=3
HL 4080 GOSUB 4100:FOR D=1 TO 20:SOUND 0,
   D,10,12:NEXT D:SOUND 0,0,0,0:GOTO 4050
SM 4090 ON R=3 GOTO M1:ON R=6 GOTO M2:ON
   R=9 GOTO M3:ON R=12 GOTO QUIT
YB 4100 COLOR CC:PLOT 4,R-1:DRAWTO 16,R-1
   :DRAWTO 16,R+1:DRAWTO 4,R+1:DRAWTO 4,R
   :RETURN
SX 4999 REM  QUIT PROGRAM   5000 >>>
EG 5000 GRAPHICS 0:POKE 82,2:POKE 752,0:E
   ND
```

A Graphics 1 or 2 lower case screen puts hearts in all its blank spaces because the second half of the character set does not have a "space" symbol. LINE 3010 gets over this problem by making the "hearts" colour register the same colour as the background screen (viz. POKE 708,0 - the background at location 712 is already 0). Another solution would be to redefine a character as a space.

The menu itself is very similar to Menu One. This time the options are at rows 3, 4, 5 and 6 because we're using a Graphics 2 screen and CHR$(18) produces the symbol found on the CTRL-R key. Symbol movement and option selection are the same as Menu 1.

Menu Four: The menu names are printed at rows 3, 6, 9 and 12 (LINES 4030-40) and the variable R defines the "current" row number. The subroutine at LINE 4100 draws a "box" around the name at row R using the symbol and colour determined by the variable CC. Spaces (CC=32) are used to blank out the 'old' box and then plus signs using register 3 at location 711 (CC=139) are drawn at the new location.

Next issue ...

Graphics 3 to 7 and text in Graphics 8

FANCY A ROUND?

A round at the local golf club costs a packet so Patrice Robert tries out the game on his XL/XE instead

This time I decided to have a look at all the golf games available for the Atari 8-bit micros. This idea took me after several trials in this sport, I mean the real sport! Playing golf in France is much more expensive than in England, however and I wondered if I could recover the same feeling on my screen as I felt on the green. Well, I haven't been disappointed. For this review, I have separated miniature golf games from the "big" golf game. Although both are fun, it's rather easier to compare them by category.

THE EARLY DAYS

My first try at this sport was via **HAYDEN GOLF** produced by Hayden Book in 1983. The game includes on-screen instructions where the computer asks a few questions and then draws the first hole. When playing the game each hole has a top view and a side view at the same time on the screen. In the top view, you will be able to see the tee and flag. Information for driving and putting is given on a status line (hole number, distance from hole, par, number of strokes).

The computer then asks you the club you want to use. Answer by typing a number followed by W (for wood), or I (for iron). The pitching wedge and the sand wedge being available by typing respectively 10I and 11I. Next the strength (0 to 10) and the direction (by a value number between 0 and 360) can be selected. On the green, as with most golf games, only strength and direction are asked. A help chart is also given by typing the letter C from the prompt informing you the current score and displaying a list of woods and irons and their corresponding average distances.

The playfield displayed from the top view offers a view without any trees. On the green, the playfield displayed is bigger offering a much better view of your situation. I finally discovered in playing this game that up to 4 players can play and select their handicap. In some retailer's catalogues you will see this game called **CHAMPIONSHIP GOLF**. Remember it's a keyboard driven game! As to my verdict, I would say that it's not the best golf game but then it was produced in 1983!

IT'S A FUNNY OLD GAME

Next, I played **GOLF CHALLENGE** which is, in my opinion, one of the funniest golf games reviewed here. Why? Because the playfield is very simple although well designed. This one offers a top view including trees, water, greens and your player who has the same appearance as the tennis player from the Atari cartridge! You manipulate the player and make him walk near the ball and then make the club go round until it hits the ball. On the green, which increases in size when you enter it, the action is the same. It is the player's movement and the way he hits the ball that makes this entirely joystick driven game quite funny.

GETTING BETTER

The following two versions of golf on XL/XE are of higher quality than the previous ones.

I much prefer **MAXI GOLF** produced one year later in 1984 by Adventure International. The game comes on four disks and is of top quality with great graphics and the real feeling of playing golf! This version is more sophisticated than the previous one because of the display screen offering a view of all the fairway, including trees, bunkers, sand traps, rivers, water plans, and even your player's feet. You can feel the difference by just watching the presentation screen with crossed clubs supported by introductory music. The main characteristics of this game are the display of the golfer's progress in a chart and overall the nice top view of the playfield with several obstacles. This display of the game makes it quite attractive. The bottom of the screen offers data on clubs, strokes, wind, strength, length, number of shots, curve and direction. Another good point for this game is that it is joystick driven.

You can follow the flight of your ball after your shot hoping that it doesn't hit a tree or fall in the water. This game is also differentiated from the others by the inclusion of a course designer giving you the possibility to build your own fairway.

THE MASTER GAME!

Now for the grand master - **LEADER BOARD** produced by Access in 1986. This stunning version of golf really made me speechless the first time I saw it as I discovered a 3D

playfield and outstanding player animation. Graphically unequalled in the XL world of golf games, the 8-bit version gives the same feeling as the ST version. This game makes me think of the Interactive CD machine, recently introduced by Philips, which has a golf game quite similar to LEADER BOARD.

The only thing I would have liked to see on the XL adaptation is the top view, which has been included in many other adaptations of this game, as well as trees which don't appear in our machine's version. In my opinion, this game is the most complete golf game for the XL/XE as you can play up to 4 players with different levels (novice, amateur, professional) and select 18, 36, 54 or 72 holes (you must have a lot of spare time ahead for this one!). On the information side, the game gives you everything you need: hole number, par number, course number, strength (graphically displayed), distance from hole, possibility of slice, wind direction etc.

With the addition of **LEADER BOARD TOURNAMENT** additional courses are available but the playfield still has no trees and no less water (the initial version could make you think you are playing on islands!).

There are some details in the Leader board's series that really give life to the game. The player's animation, of course, but also the effect of the wind directly shown and applied on your ball after your shot. There is also the small island displayed under your player's feet if your ball has fallen in a corner of the grass as well as the noise of your ball hitting the flag. If you're an 8-bit addict as I am, you can't miss playing this game with friends and good deal of spare time.

ALMOST THE LAST

The last commercial XL golf game is **PRO GOLF** produced by Atlantis software which dates from 1988. This version offers the greatest amount of options that can be defined. With a top view of the playfield, the game lets you choose if you want a championship or a practice run, a single round and medal or championship tees. Then, you decide whether you want random or user defined ground (dry, wet ...), variable or constant wind as well as its speed and direction. Finally, you select your club, direction and force of shot by pushing the two letters O and P on your keyboard. If the top view is not so well designed as in Maxi Golf, the fun of it is that the computer displays comments after your shot - "in light rough ... good lie" - for example. On the green, the display expands and the hole is drawn with complementary data showing the slope.

A BONUS

PROFESSIONAL GOLF, the disk bonus of New Atari User issue 39, offers an original concept. Not only can you play up to four players, among trees and bunkers, displayed on a top view, but you are faced with a wide range of top professional golf players all over the world. Consequently, the scoreboard displays your position among the 38 other players (as in USA Cross Country Road Race). A built-in construction set option is also included for those of you who want to create their own fairways.

GOLF AT THE SEASIDE

In the fun world of miniature golf comes **MINIATURE GOLF PLUS** produced by Xlent software in 1985 and published on the Antic disk of June/July 1990 (Vol. 9, No.2). This game offers a close up view of the whole of the playfield, as it is smaller than in the real game. You have to use and include the borders in your strategy as in a billiards game. Your shot has to be well aimed and with the correct strength or your ball could come back to your previous situation. Direction and angles have to be seriously considered to meet the goal. Original challenges are offered with different obstacles during play such as moving walls in the middle of the playfield. If you don't want to play the set holes any more, you can build your own with the construction set option included.

FOR THE PROS?

I don't know if Nicklaus or Balesteros played these games before earning thousands of dollars (I really don't think so), but there is, in these XL games, a version for each of you. LEADER BOARD for the fast player that doesn't want to get more involved in the game and wants fun from the start, MAXI GOLF for the more technical player that wants to see a larger playfield from the top view, PROFESSIONAL GOLF for building your own playfield, and MINIATURE GOLF for the billiards player that wants to study the angles and direction in a smaller display!

Hope to see you soon on the green!!!

MULTICOLOURED TEXT

Robert Stuart provides a routine to get away from those boring Graphics 0 displays

As we all know very well, the Atari XL/XE defaults to light blue text on a darker blue background in Mode 0. Many Atari users would like an easy way to get different coloured forty-column text into their own programs and indeed there was a letter in issue 46 of New Atari User asking for a program to explain how to do this. Although the words 'strictly not possible' and 'clever programming' were mentioned, it is actually very simple to achieve, although of course there are a few limitations!

TWO COLOUR LIMIT?

Firstly, Mode 0 only allows two shades of colour to be used; location 710 holds the value for the background colour and 709 the text brightness. The resolution of the screen in this mode is 320x192. To achieve multicoloured text, we must first use a mode which uses a lower screen resolution, and consequently, slightly chunkier graphics. Fortunately, 160x192 is adequate for this purpose and is used in many games instead of the normal mode 0 text. However, whereas normal characters are defined on an 8x8 pixel grid, these characters are limited to 4x8. One pixel must be used for a blank column and row between the characters (otherwise the letters would run into each other), so only 3x7 pixels are actually available for character data. This poses a few problems for certain wide letters of the alphabet such as the 'w' or 'm', but with a well-designed font, they can be made to look pretty acceptable. Some characters are even more difficult to achieve, such as the '&' or '#', but we can't have our cake and eat it! Another problem is that each font holds 128 characters, so only three full sets of 26 letters can be incorporated, (although inverse mode uses an extra colour register!) and even if the character set was larger, the Atari XL/XE only has five colour registers and one of those is for the background, so the limit is four different colours of text per screen!

CREATING A FONT

Program 1 contains a data set for a multicoloured font and a save routine to put the font onto disk (or tape) very quickly. This font is a modified version of the Atari character set which gives you four different colours for your text plus all the other normal characters (punctuation, numbers, etc.) except the Control characters (keyboard graphics). The control characters' data has been replaced with another alphabet as have the lower case letters. Once you have typed in the program (and saved a copy!!) run it and the new font will be written to disk as a 9-sector file. To save the font to cassette, simply change the 'D:' to a 'C:' in both programs.

The second program is used to load the created font and displays a message in four colours; yellow (normal text), red (lower case text), blue (control characters) and green (inverse control characters). The normal Mode 0 display list is altered to that of a four colour mode for this program without the need to call up Mode 12 or 13. Possible uses for this font include coloured text for adventure games, flashier intro screens, more attractive status lines for arcade games, and countless other uses for which monochrome text is unwanted. The four colours used in the above program can of course be changed to whatever hues you wish. Poke location 708 with 14 if you want ordinary white text. Stick to a black background for your multicoloured text and you'll have less problems, as the main characters (yellow letters, numbers, punctuation, etc.) have been specially smoothed out for greater clarity on a black screen. If more than four colours are needed, then a display list interrupt must be used, which would give up to four different colours on every screen line, but that's another story and another article!

```
MO 1 REM    MULTICOLOUR FONT LOADER
BL 2 REM      by ROBERT STUART 1993
PM 3 REM          for NEW ATARI USER
NJ 4 REM
UB 10 OPEN #1,4,0,"D:MULTICOL.FNT"
YU 20 POKE 850,7:POKE 852,0:POKE 853,140:
   POKE 856,0:POKE 857,4
KJ 30 XX=USR(ADR("hhh[illegible]LV[illegible]"),16):CLOSE #1
WU 40 POKE 39971,68:FOR F=39974 TO 39996:
   POKE F,4:NEXT F:POKE 756,140
MG 50 POKE 708,220:POKE 709,54:POKE 710,1
   18:POKE 711,200
XQ 60 ? CHR$(125)
GO 70 POSITION 0,2:? " THIS IS THE FIRST
   COLOUR"
FL 80 POSITION 0,4:? " this is the second
    colour"
JX 90 POSITION 0,6:? " [illegible]
   [illegible]"
QU 100 POSITION 0,8:? " [illegible]
   [illegible]"
```

Program 2 - a font loader

```
GV 0 REM  MULTICOLOUR TEXT CREATOR 
PY 1 REM  BY ROBERT STUART  1993 
DH 2 REM  FOR NEW ATARI USER 
NQ 3 RESTORE 5:FOR F=0 TO 1023:READ X:POK
   E 35840+F,X:NEXT F
QK 6 CLOSE #1:OPEN #1,8,0,"D:MULTICOL.FNT
   "
TB 7 POKE 850,11:POKE 852,0:POKE 853,140:
   POKE 856,0:POKE 857,4
NN 8 XX=USR(ADR("hhh*LVd"),16):CLOSE #1
KV 10 DATA 0,0,0,0,0,0,0,0
RC 12 DATA 16,16,16,16,16,0,16,0
LF 15 DATA 68,68,68,0,0,0,0,0
AH 20 DATA 68,68,168,68,168,68,68,0
TG 25 DATA 220,84,80,220,20,84,220,0
PY 30 DATA 196,116,20,220,80,124,68,0
PF 35 DATA 220,68,220,16,244,68,220,0
BN 40 DATA 16,16,0,0,0,0,0,0
BE 45 DATA 52,16,16,16,16,16,52,0
VB 50 DATA 28,4,4,4,4,4,28,0
ZZ 55 DATA 0,68,220,84,220,68,0,0
PE 60 DATA 0,16,16,84,16,16,0,0
EU 65 DATA 0,0,0,0,16,16,112,0
JV 70 DATA 0,0,0,84,0,0,0,0
HO 75 DATA 0,0,0,0,16,16,0,0
AO 80 DATA 4,52,20,220,80,112,64,0
UI 85 DATA 220,68,116,84,116,68,220,0
IL 90 DATA 48,80,16,16,16,16,84,0
ZN 95 DATA 92,4,4,220,64,64,212,0
WP 100 DATA 92,4,4,28,4,4,92,0
FP 105 DATA 4,52,20,212,68,84,4,0
IL 110 DATA 84,64,220,4,4,68,220,0
HH 115 DATA 64,64,64,92,68,68,220,0
SX 120 DATA 84,4,4,4,4,4,4,0
AI 125 DATA 220,68,68,220,68,68,220,0
BA 130 DATA 220,68,68,212,4,4,4,0
KC 135 DATA 0,16,16,0,16,16,0,0
SK 140 DATA 0,16,16,0,16,16,112,0
XH 145 DATA 12,52,220,112,220,52,12,0
KF 150 DATA 0,0,84,0,0,84,0,0
BW 155 DATA 192,112,220,52,220,112,192,0
AP 160 DATA 220,68,4,52,28,0,16,0
DY 165 DATA 0,220,68,116,92,64,220,0
XP 170 DATA 220,68,68,84,68,68,68,0
NL 175 DATA 92,68,68,92,68,68,92,0
NB 180 DATA 220,68,64,64,64,68,220,0
PY 185 DATA 92,68,68,68,68,68,92,0
AB 190 DATA 84,64,64,80,64,64,84,0
YM 195 DATA 84,64,64,80,64,64,64,0
SO 200 DATA 220,68,64,76,68,68,220,0
SP 205 DATA 68,68,68,84,68,68,68,0
QN 210 DATA 84,16,16,16,16,16,84,0
QZ 215 DATA 20,4,4,4,4,68,220,0
TE 220 DATA 68,116,92,80,92,116,68,0
AZ 225 DATA 64,64,64,64,64,64,84,0
DY 230 DATA 68,116,84,116,68,68,68,0
TB 235 DATA 92,68,68,68,68,68,68,0
WM 240 DATA 220,68,68,68,68,68,220,0
ES 245 DATA 92,68,68,92,64,64,64,0
AJ 250 DATA 220,68,68,68,116,92,212,0
QU 255 DATA 92,68,68,92,68,68,68,0
IN 260 DATA 212,64,64,220,4,4,92,0
ME 265 DATA 84,16,16,16,16,16,16,0
QC 270 DATA 68,68,68,68,68,68,220,0
KI 275 DATA 68,68,68,68,68,220,16,0
UD 280 DATA 68,68,68,68,84,116,68,0
VJ 285 DATA 68,68,68,220,68,68,68,0
ZO 290 DATA 68,68,68,220,16,16,16,0
VB 295 DATA 84,4,52,220,112,64,84,0
BO 300 DATA 20,16,16,16,16,16,20,0
GO 305 DATA 64,112,80,220,20,52,4,0
KK 310 DATA 80,16,16,16,16,16,80,0
BG 315 DATA 0,220,68,0,0,0,0,0
IV 320 DATA 0,0,0,0,0,0,84,0
DB 325 DATA 204,116,84,84,220,48,0,0
CD 330 DATA 48,204,204,252,204,204,204,0
PY 335 DATA 240,204,204,240,204,204,240,0
GI 340 DATA 48,204,192,192,192,204,48,0
QE 345 DATA 240,204,204,204,204,204,240,0
QB 350 DATA 252,192,192,240,192,192,252,0
US 355 DATA 252,192,192,240,192,192,192,0
AN 360 DATA 48,204,192,192,204,204,48,0
TF 365 DATA 204,204,204,252,204,204,204,0
XC 370 DATA 252,48,48,48,48,48,252,0
KG 375 DATA 60,12,12,12,12,204,48,0
PT 380 DATA 204,204,240,240,240,204,204,0
XP 385 DATA 192,192,192,192,192,192,252,0
UB 390 DATA 204,252,252,204,204,204,204,0
QS 395 DATA 240,204,204,204,204,204,204,0
QY 400 DATA 48,204,204,204,204,204,48,0
LG 405 DATA 240,204,204,240,192,192,192,0
IY 410 DATA 48,204,204,204,204,240,60,0
PZ 415 DATA 240,204,204,240,204,204,204,0
VJ 420 DATA 60,192,192,252,12,12,240,0
RW 425 DATA 252,48,48,48,48,48,48,0
TV 430 DATA 204,204,204,204,204,204,252,0
JU 435 DATA 204,204,204,204,204,252,48,0
WM 440 DATA 204,204,204,204,252,252,204,0
DJ 445 DATA 204,204,204,48,204,204,204,0
FC 450 DATA 204,204,204,48,48,48,48,0
KN 455 DATA 252,12,12,48,192,192,252,0
OQ 460 DATA 48,220,84,84,116,16,48,0
UW 465 DATA 0,16,84,220,16,16,0,0
UM 470 DATA 0,16,16,84,220,16,0,0
YT 475 DATA 0,16,112,84,112,16,0,0
TQ 480 DATA 0,16,52,84,52,16,0,0
PH 485 DATA 48,220,84,84,84,220,48,0
YK 490 DATA 32,136,136,168,136,136,136,0
HV 495 DATA 160,136,136,160,136,136,160,0
ZF 500 DATA 32,136,128,128,128,136,32,0
KB 505 DATA 160,136,136,136,136,136,160,0
ZH 510 DATA 168,128,128,160,128,128,168,0
UM 515 DATA 168,128,128,160,128,128,128,0
YH 520 DATA 32,136,128,128,136,136,32,0
UM 525 DATA 136,136,136,168,136,136,136,0
EU 530 DATA 168,32,32,32,32,32,168,0
ZW 535 DATA 40,8,8,8,8,136,32,0
GX 540 DATA 136,136,160,160,160,136,136,0
CG 545 DATA 128,128,128,128,128,128,168,0
WI 550 DATA 136,168,168,136,136,136,136,0
OS 555 DATA 160,136,136,136,136,136,136,0
WX 560 DATA 32,136,136,136,136,136,32,0
PS 565 DATA 160,136,136,160,128,128,128,0
RY 570 DATA 32,136,136,136,136,160,40,0
LZ 575 DATA 160,136,136,160,136,136,136,0
NN 580 DATA 40,128,128,168,8,8,160,0
LB 585 DATA 168,32,32,32,32,32,32,0
WT 590 DATA 136,136,136,136,136,136,168,0
XN 595 DATA 136,136,136,136,136,168,32,0
AP 600 DATA 136,136,136,136,168,168,136,0
SL 605 DATA 136,136,136,32,136,136,136,0
IR 610 DATA 136,136,136,32,32,32,32,0
UE 615 DATA 168,8,8,32,128,128,168,0
SI 620 DATA 48,220,84,116,68,16,220,0
KE 625 DATA 16,16,16,16,16,16,16,0
JN 630 DATA 84,80,92,116,68,12,0,0
FQ 635 DATA 4,52,212,84,212,52,4,0
JQ 640 DATA 64,112,92,84,92,112,64,0
```

Program 1 - Creating a font

MEGA MAGAZINE

reviewed by Paul Rixon

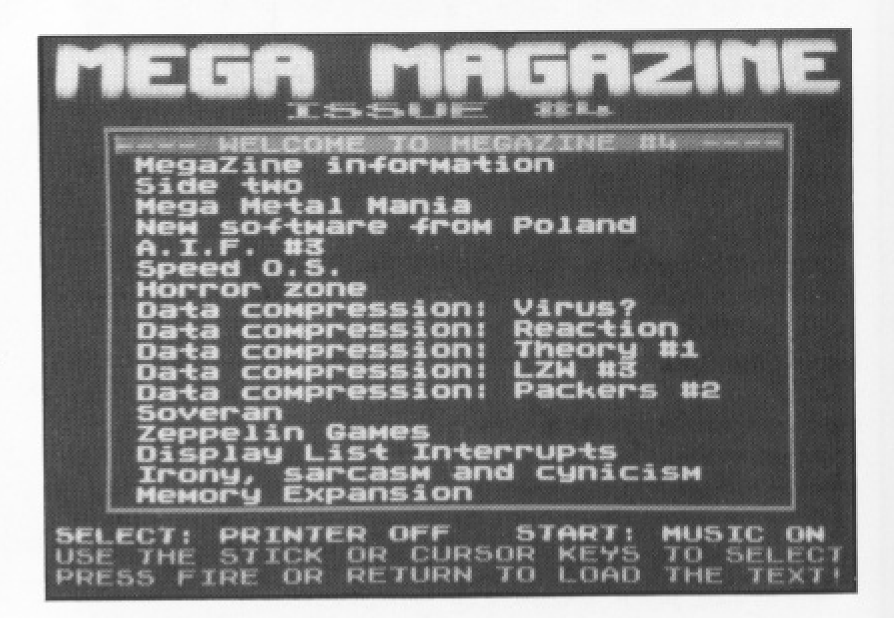
The floppy disk has become a popular medium for exchanging news, reviews and topical information among 'specialised' computer users. The expense of printing magazines on paper has proved a major incentive for small-scale publishers to search for other means of communication. Disk mags can also act as a point of distribution for the latest public domain software and are therefore readily accepted by users. I recently received the first four issues of a publication designed exclusively for the benefit of Atari owners. You may have heard the name MEGA MAGAZINE, a disk mag created by Freddy Offenga (aka Frankenstein) of 'Big Demo' fame and distributed by A.N.G. software of Holland. You may not have heard that Micro Discount are now handling UK sales, thereby removing the hassle and additional expense of overseas payment.

It's safe to say that Mega Magazine is unlike other disk mags you may have encountered. In common with most, each issue is supplied on a double-sided floppy and follows a fairly consistent format - side one contains a wide variety of textual material whilst side two is reserved for program files. However, the text part isn't as dull as you might expect. The disk boots up with an impressive menu system accompanied by excellent music. The articles load separately from disk and, due to the compression techniques employed, there is a LOT to read! The text viewer is extremely user-friendly and lets you scroll back and forth at different speeds, using joystick-controls. You can choose almost all the options with a joystick - the only exceptions are console-key presses to silence the background music or toggle output to a printer.

Regular features established in the launch issue include hints and tips for popular games, programming tutorials, demo reviews, a substantial Lynx section, a mailbag and a column especially for heavy metal freaks. There are twenty-seven text items in issue one with subjects ranging from 3D vector graphics to the story of the High Tech Team and what happened to their Platinum demo. The flip side is packed full with challenging screen files designed for use with the Boulderdash Construction Set.

Among many articles in issue two there's a list of illegal assembler opcodes, a review of the Black Magic Composer and full details of an Atari 8-bit stereo upgrade. The Lynx section offers news, reviews and tips on established titles. Side B contains, by popular demand, no more Boulderdash screens! Instead there are three excellent demos from Turkey, Norway and Poland with the usual mixture of scrollers, music and special graphic effects (love the Black Lamp music!), as well as a shareware archiver with full instructions so you can access several other compacted files on the disk. Some of these relate to the articles (for example, programs to use with the stereo upgrade) while others provide source code, utilities and pictures.

Issue three investigates fractal graphics, hardware enhancements, compression techniques, CSS products and much more. The fractals article is accompanied by a demo of the mandelbrot set and utilities to help you explore and create your own fractal drawings. Elsewhere there's a demo of a



Polish game called Tanks - it looks impressive! - and another conventional demo from Turkey. There's more information on stereo enhancements and a source code listing from part of the Atari Expo II demo, so you can find out how they do it!

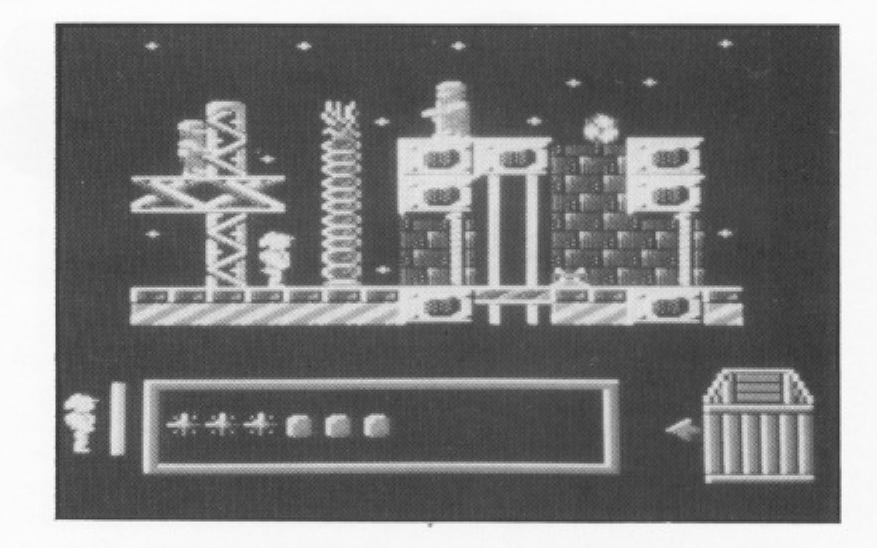
The fourth issue takes a look at games from A.N.G. and Zeppelin Games, demos from various sources and Wosfilm's Disassembler. It also investigates display list interrupts, happy faces and philosophical matters. As well as two lively demos the program section contains an innovative module player from Poland that uses sound-tracker 'MOD' files converted from the ST and Amiga. It's accompanied by three example modules. There's a program to uncompact LZW files, one to check that your RAM banks are in working order and another that's handy for those who use a BBS to download disks as single files - it converts files to disks and vice versa.

I could fill up the rest of the magazine describing the content but you will already realise that Mega Magazine is packed to the last byte with information, reviews, programs, demos and almost anything to do with the world of Atari 8-bits. There is a bias towards programming topics and issues of a technical nature though the authors are aware of the need to cater for 'average' users. If you're exclusively interested in games you'll probably find it disappointing.

Unfortunately I must end by drawing your attention to the warning which appears in the introduction of every issue. Mega Magazine contains some language that would not be considered suitable for children. Given that many Atari-owning children will find the remaining articles of great interest, and that many adults would prefer the offending material to be removed, it's a mystery to me why the Editor doesn't make an effort to clean up the magazine's content. Apart from this one drawback, Mega Magazine is truly amazing!

MEGA MAGAZINE is published by A.N.G. software, Ridderkerksestraat 60, 3114 RK, Schiedam, Netherlands and distributed in the UK by Micro Discount, 265 Chester Road, Streetly, West Midlands, B74 3EA. Telephone (021) 353 5730. The price is £3 each for issues 1-4 or £10 for the set.

ADAX



Another new game! This one, called ADAX, is an arcade adventure from Avalon in Poland and has been imported to the UK by Micro Discount, who specialise in offering formerly undiscovered products. Although the program contains a few Polish screen prompts this is not a problem as the meaning is generally obvious and an English translation of the playing instructions is supplied.

It would seem that aliens have invaded the nearby planet of Adax and the Space Defence Force have commissioned their most dependable (or is that expendable?) employee - that's you - to investigate the situation. It doesn't take you long to discover that the nasties have constructed a military base and are planning to launch a massive attack on Earth itself. Needless to say, your new mission is to wipe out the HQ and see the meanies out of town!

The game kicks off, rather worryingly, in a style similar to Green Beret and similar shoot 'em ups. There are dozens of guards for your man to avoid and your platform jumping skills are vigorously tested. Fortunately, it soon becomes apparent that there's more to Adax than simply blasting the baddies. In line with all arcade adventures there are various objects you will have to find and utilise in order to successfully complete your mission. When you come across a likely-looking box of goodies you can inspect the contents before deciding whether to keep or discard them. If you wish, you can swap a new item for one you already have. Missiles are obviously useful for dealing with the opposition's defences but you'll also need keys to access different sections of the base. Ultimately you're expected to locate six floppy disks that contain the enemy's strategic plans (backups, what backups ...?) and plant a bomb in the power station for the grand, booming, finale!

A great deal of effort has been invested in the visual design of Adax - there's no shortage of colour, detail and imagination. The game also benefits from good animation and clever features such as lifts and a high-speed transporter. The background music isn't bad though a silent mode can be chosen if preferred.

Well, I'm impressed! Adax is an all-round high quality production with enough action and intrigue to ensure you won't lose interest in a hurry. If arcade adventures are up your street, this is one you won't want to miss.

Title:	**ADAX**
Publisher:	**Avalon/Micro Discount**
Price:	**£5.95**
Format:	**Disk**

Reviewed by Paul Rixon

BOING II & SPEEDFOX

Originally launched as separate budget-priced disk games, Boing II and Speedfox can now be obtained from Kent-based Tiger Developments in the form of a single compilation.

The first version of Boing, which was included with one of the Excel disk magazines (see NAU issue 59), ran along similar lines to Bounder - a popular jumping game on various micros and known to Atarians in the guise of Gremlin's Trailblazer. Boing II is based on a similar principal but also includes a shoot 'em up element. The game is a horizontal scroller and your joystick controls a small bouncing ball as it travels on a lengthy journey over hazardous territory. You must take care not to fall through gaps into the sea or collide with alien matter, since either event will result in the loss of life. You can shoot at the attacking nasties for temporary respite though ammunition is limited. Luckily there are bonus squares providing such useful effects as additional ammo, smart bombs and limited missile protection. The graphics and sound effects are adequate. Boing II is a simple but addictive game, and it's worth persevering to experience the later levels (or you can use cheat mode instead!).

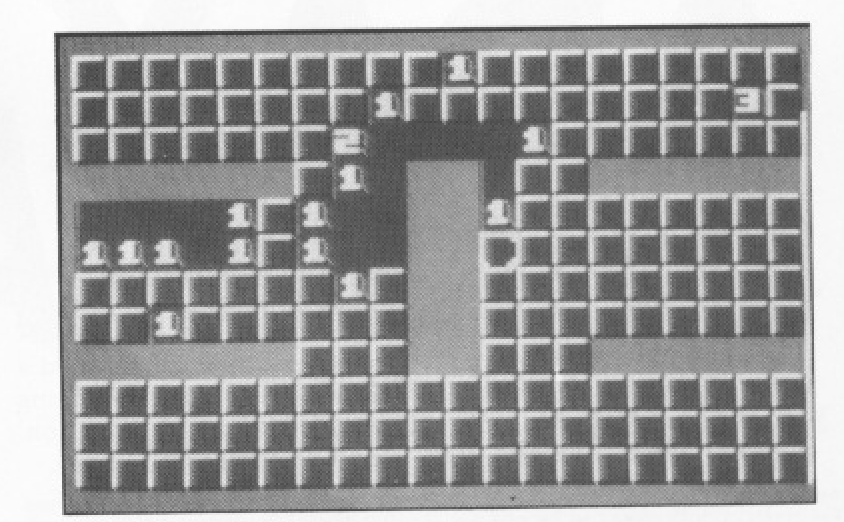
A highly advanced parallel universe is the setting for Speed Fox, yet another game that has been justified by the need to save innocent citizens from an imminent alien attack. In contrast with the imaginary universe, the screen design is actually rather basic - each level is presented as a single screen. Your objective is to zip around the playfield collecting enemy cells (they belong to a genetically engineered monster, apparently) whilst avoiding the unrelenting cross-fire from two alien spaceships positioned either side. A time limit adds to the challenge and there are bonus pills on offer to give you special powers such as jumps and temporary shield. Due to the rapid speed of action and the fact that your ship is limited to vertical and horizontal movement, Speed Fox is not an easy game to contend with. It may not be long before, like me, you decide to re-boot and try another round of Boing II instead!

Boing II is a reasonably entertaining game though Speed Fox is unlikely to hold your attention for long. Cassette users presently miss out but Tiger Developments have hinted at future plans to offer a compilation tape of their recent releases.

Title:	**BOING II & SPEEDFOX**
Publisher:	**Tiger Developments**
Price:	**£4.99**
Format:	**Disk**

Reviewed by Paul Rixon

BOMB



This straightforward puzzle should be familiar to PC users since a very similar game known as Minesweeper is bundled as standard with copies of the multi-tasking desktop environment Microsoft Windows 3.1. It must be one of the most frequently played games at the expense of commercial organisations!

The player of BOMB is faced with a large grid of rather dull squares and a joystick operated cursor. The object of the exercise is to clear the grid of dangerous mines which have been concealed under some of the squares. By placing the cursor on a square and pressing either the space bar or joystick trigger you must decide whether the underlying territory should be designated a mined or safe area respectively. To help you in this seemingly foolhardy task the safe areas, once revealed, are labelled with numbers representing the quantity of mines in the immediately surrounding squares. Once you've successfully cleared a small portion of the grid you can apply certain rules of logic to replace the element of guesswork that would otherwise be required. For example, if you unearth a mine with an adjacent safe square labelled '1', there can be no more mines surrounding the latter.

You've got to move quickly since your time allowance is limited. It doesn't pay to take chances - if you fail to correctly identify the nature of a square the game is abruptly ended. At first the task seems almost impossible but addiction sets in as you gradually improve your playing technique. You can move up through a total of twenty levels, the later stages offering differently shaped grids constructed from a greater quantity of squares. Eventually it becomes more a case of luck than judgement!

Graphics are no more than functional (the all-too-frequently experienced game over sequence is particularly unimpressive) while a reasonable tune accompanies gameplay. Unfortunately my copy of Bomb contained a small bug that came to light upon the completion of a dozen games. The program froze at the start of the thirteenth round and refused to accept inputs - Ke-Soft have assured me this will be fixed in the release version.

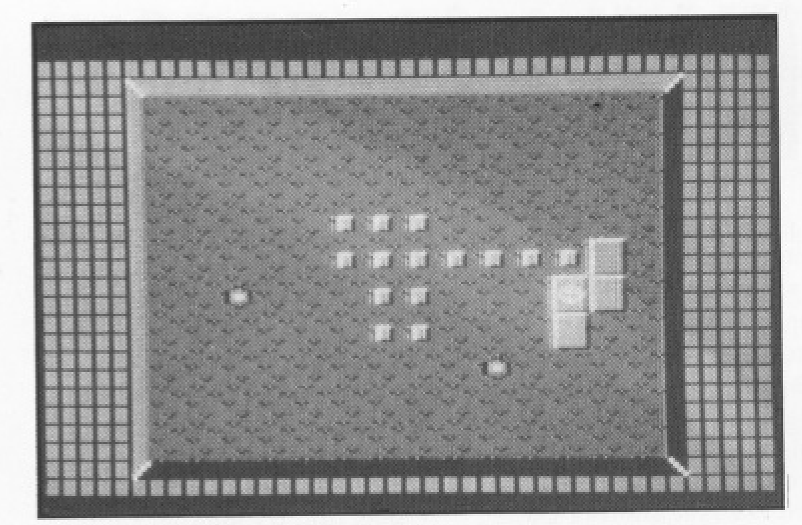
Bomb is not one of Ke-Soft's most prestigious efforts but it's an addictive puzzle, none the less.

At present it's only available direct from Germany so you'll need to check the exchange rates before ordering. Drop Ke-Soft a line and they'll send you the latest price list.

Title:	**BOMB**
Publisher:	**Ke-Soft**
Price:	**DM14,80**
Format:	**Disk**

Reviewed by Paul Rixon

PLAYER'S DREAM III



Ke-Soft have now released three disks in their Player's Dream series of compilations. The first instalment (see NAU issue 53) is presently the only one available with English instructions, though Ke-Soft are well able to provide a translation if there's sufficient demand. PLAYER'S DREAM III comprises three games though at present only two will interest the majority of British players - the third is a German-only text/graphics adventure. Fortunately the other two programs, Jump and Overblow, contain English messages.

Jump is a revamped version of a very old arcade game that's intended to stretch your powers of eye-to-hand co-ordination. The joystick commands a ball which is perched on a platform constructed from four small squares. Every few seconds a tile at the end of the platform dissolves and subsequently reappears somewhere around the front, giving the effect of movement in a snake-like fashion. To avoid losing the ball you've got to ensure it keeps rolling to the front of the platform. On the first few screens this is relatively simple but when the game speeds up your reactions are severely tested!

There are several opportunities to obtain bonus points though on higher levels (there are fifteen altogether) but the score will probably be the least of your worries! Jump relies on simple graphics and sound, but the game is surprisingly addictive.

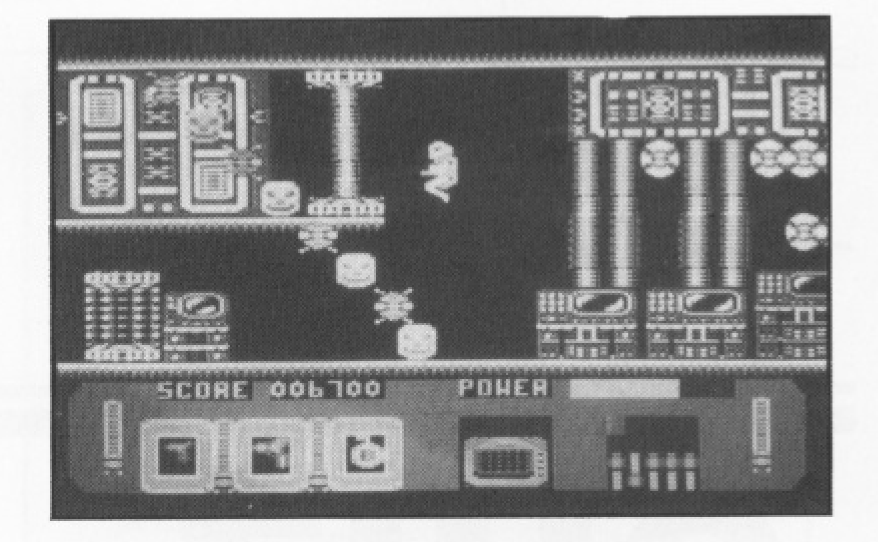
Overblow is a rather unusual two-player strategy game that combines a hint of Othello with a fairground scenario! The players take turns to place coloured balloons on a large grid and aim to end up with the highest number of their individual colour. If desired, a player can choose to inflate one of the existing balloons. After several 'blows' the balloon explodes and spawns new balloons in the four adjacent positions. These may already be occupied by opposing balloons, which are thereby transferred to the current player, or similar balloons which are then inflated in the same way as before. With careful planning it's possible to set off a chain reaction and radically change the grid's complexion in a single move! Overblow is much, much easier to play than it is to explain. True two-player games are few and far between but this one is a fine example.

Despite the inclusion of a German adventure Player's Dream III is well worth investigation. Overblow is a nice game for two players while Jump provides a useful bonus.

Title:	**PLAYER'S DREAM III**
Publisher:	**Ke-Soft**
Price:	**DM14,80**
Format:	**Disk**

Reviewed by Paul Rixon

LIZARD



Tiger Developments' latest production is a horizontally scrolling shoot 'em up with a host of added complications. The game is a combined effort by Neil Ottaway - the man responsible for Tarkus and Mission Zircon - and Robert Stuart of Excel disk-mag fame, who also knows a thing or two when it comes to designing computer graphics.

Chances are you may not have heard that members of the Reptilian System have formed an alliance and are all geared up to invade the Earth in order to set up breeding colonies. Now that you have, you'll surely want to play your part in defending mankind!

Your joystick manoeuvres a jet-packed character who is not unlike the one in Mission Zircon - for some reason I find his manner rather unconvincing! You can scroll in either horizontal direction through the alien world which is defined by a stunning assortment of colourful backdrops. Robert Stuart has really gone to town in providing as many colours, objects, patterns and features as you could possibly hope to encounter. There are dozens of obstructions to negotiate though it's sometimes difficult to know where they are until you hit them! The continuous waves of space-invader style nasties are rather more conspicuous, but no less hazardous. The best policy may be to keep your finger firmly on the fire button and hope for the best!

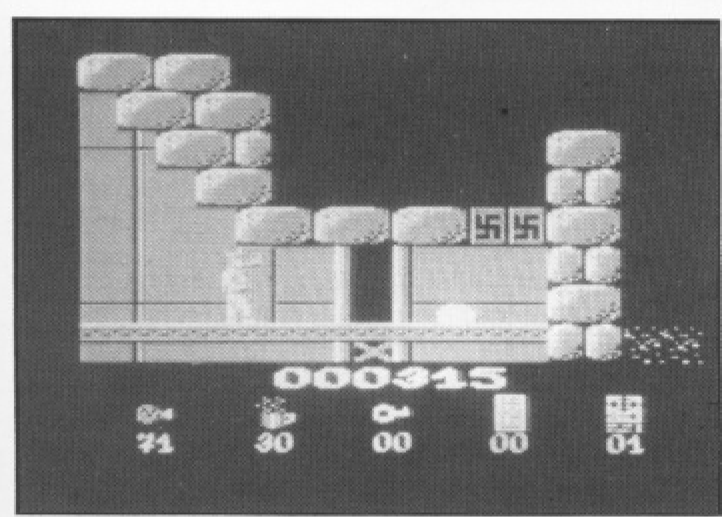
Despite its initial appearance Lizard is by no means a straightforward blasting expedition. Whenever you get an opportunity you should look out for solar panels that must be destroyed to disable the enemy force fields. You should also investigate objects that may contain bonus points, power, bombs or a gun. Your current weapons, including space-bar operated smart bombs, are shown on a status console below the scrolling window. As if you didn't have enough problems you've got to collect up letters and arrange them in a colour-coded group. The letters form a password that will enable you to log onto a computer terminal, in order to obtain a mega-gun that you'll need to tackle the tyrant beast on each planet (a Lizard, maybe?). Phew! After the first, there are four further levels to complete.

Lizard is a very challenging game and, apart from the gripe I have about the unprofessional appearance of the central character, is a graphical success. Tiger Developments' software improves with every release - this is their best yet!

Title:	**LIZARD**
Publisher:	**Tiger Developments**
Price:	**£4.99**
Format:	**Disk**

Reviewed by Paul Rixon

HANS KLOSS



Dwindling 8-bit support in the UK seems to have been countered recently by an upsurge of activity overseas. In particular, Poland has unexpectedly emerged as a valuable source of high quality software. A fine example is HANS KLOSS - an arcade adventure from Avalon of Poland imported to this country by Micro Discount. It's similar in nature to Avalon's Adax which is also reviewed in this issue. The program text is Polish but translations are listed as part of an English instruction leaflet.

The plot unfolds during the height of World War II. Hitler has instructed his scientists to develop a new, powerful missile that will thwart any plans the allies may have of putting a stop to his reign of terror. Fortunately, allied intelligence have located the underground bunker where the missile is to be built and launched. They have now decided to urgently despatch their most experienced and successful secret agent, alias Hans Kloss, to infiltrate the complex and destroy all relevant documentation.

Your part in all this is to help Hans Kloss obtain nine pictures and twelve other documents, all of which are positioned deep in enemy territory. You will need to look out for keys, since there are many locked doors in your path. You'll also need regular supplies of food and drink to replenish your steadily depleting reserves. There are numerous lifts to help you get around but also some nasty traps to catch you out! Conspicuous nasties aren't too difficult to overcome but trip-switch operated sniper fire is a real killer!

The main playing window occupies about two thirds of the total screen area, the remainder being used to indicate your score, health and number of items collected. The pleasantly detailed scenes 'flip' as you walk or jump through screen boundaries. Animation of the central character, who is rather green to say the least, is good quality stuff. The lifts scroll smoothly and the joystick controls feel responsive and comfortable. A good sound-track accompanies the action - for once I preferred not to turn it off!

Without doubt, Hans Kloss is one of the best arcade adventures to hit the Atari world for ages. I blame it entirely for missing the copy deadline this issue! If there is sufficient interest in this game and other recent imports, there are bound to be more in the future. Isn't it time you gave yourself a treat?

Title:	**HANS KLOSS**
Supplier:	**Avalon/Micro Discount**
Price:	**£5.95**
Format:	**Disk**

Reviewed by Paul Rixon

Ian Finlayson's

TUTORIAL TIME

QUIZ TIME

The initial concept for this article came from an enquiry by Paul Robinson. He has written a quiz program for young children and wanted to make it more challenging by setting time limits on the answers. Initially I was just going to send a quick reply talking about the built-in timers in the Atari operating system, but then I thought a bit further, and realised that the problem was not so very easy. A straightforward timer is not difficult to implement, but a timer which will display continuously on screen while something else useful is being done by the computer is rather more difficult in Basic. So I thought I had better prove my concept by incorporating it in a little general knowledge quiz of my own. It works, as you will see if you type in the listing.

THE BUILT IN TIMERS

The fundamental principle of the timing is in memory locations 18, 19 and 20. Together these three can make quite a useful clock, with accuracy that is good enough for most short and medium time requirements, though they are probably not accurate enough for a clock that runs day in and day out. Location 20 is the first part of the timer. It counts up in jiffies - that is fiftieths of a second in the UK and sixtieths of a second in the USA. The difference must have something to do with electric mains frequencies and the refresh rates of television sets (also 50Hz here and 60 Hertz in the United States). This counter counts up from zero to 255 and then resets to zero as location 19 increments by one. Similarly location 18 increments every time memory location 19 gets to 256 and resets in its turn to 1.

You can work out that location 20 counts from zero to 255/50 (5.12 seconds) and then resets so location 19 counts in intervals of 5.12 seconds to 5.12*256 (1310.72 secs or 21 minutes and 50.72 secs). Location 18 only increments every 21 minutes and 50.72 seconds, so it does not reset until 93 hours 12 minutes and 24.32 seconds have elapsed. This should be quite enough for any Atari application, so I will not try to work out a routine that takes account of the clocks all resetting to zero at that time.

This clock system can be used in Basic programs by PEEKing locations (18), (19) and (20) and then performing a little mathematics. Lines 600 and 601 of the listing turn the peeks into elapsed time in whole seconds. I could well have left out the PEEK(18) term for use in this program as I would not expect to give anyone more than 21 minutes to answer a single question, but including it gives you a more general case for modification and use in other programs.

PROGRAM FLOW

The other aspect of timing using Basic that has to be considered carefully is program flow. The main loop of the program must iterate reasonably quickly and continuously, and each iteration must have an element that redraws the clock counter to the current setting. If the program iteration stops - for instance to get an input by INPUT or GET - the updating of the clock display will also stop. Of course the timers keep running, but if you cannot see where they have got to they are not much use.

So, if we must not use INPUT or GET for keyboard input, how can we make the program interactive? I made the quiz multiple choice so that a single key press could be used for an answer. Now, the answer lies in the subroutine that starts at line 800. What this does is look in memory location 764 to find the code of the last key pressed. If no key has been pressed the value is 255 all the other keys have different values called keycode values. Unfortunately these values are neither the same as the ATASCII values (that is what you get from the ASC function), nor the same as the ICODE value (that is the value you have to Poke into screen memory to display a character on screen), and your Basic manual will not tell you either. There is a book called Compute's Third Book of Atari which has a whole Appendix devoted to the various keycodes, but I don't know if it is still available. You will just have to find the codes for yourself -the very short program listing will help. For the benefit of this quiz with a choice of three answers we only need to know that pressing 1 results in a value of 31, 2 gives 30 and 3 gives 26. We read the value into variable KEYP in line 800 and then set the variable IN to 0 (no key pressed), 1, 2 or 3 as appropriate. Finally location 764 is reset to a value of 255 before returning from the subroutine.

All this may sound a bit complicated, but it allows the program to keep recycling through lines 110,115,120,125 and the subroutines they call until a key is pressed, and in each cycle the LOOKUP subroutine at line 600 updates the timer. When a key is pressed the timer stops.

```
WO 1 REM ******************************
CR 2 REM *     TUTORIAL SUBROUTINES     *
YQ 4 REM * QUIZ WITH COUNTDOWN TIMER  *
XU 5 REM *            by              *
CO 6 REM *       Ian Finlayson        *
OG 7 REM *----------------------------*
EZ 8 REM * NEW ATARI USER - APR 1993  *
WW 9 REM ******************************
AY 10 REM
KZ 20 DIM Y$(1):RESET=500:LOOKUP=600:KEY=
   700:INKEY=800
EO 21 DIM Q$(36),A1$(12),A2$(12),A3$(12)
JL 30 ? "K↓↓↓MULTIPLE CHOICE QUIZ ----"
RF 32 ? :? "    ---- PRESS ANY KEY TO STAR
   T"
AB 40 GOSUB KEY
JM 50 READ Q$:IF Q$="XXX" THEN ? "K↓↓↓↓GA
   ME OVER":END
ME 52 READ A1$,A2$,A3$,Y,T
JJ 60 ? "K↓↓↓↓":? :? Q$;"?":? :? "1. ";A1
   $:? :? "2. ";A2$:? :? "3. ";A3$
OK 61 POSITION 34,0:? "*****"
QJ 62 POSITION 22,1:? "TIME TO RUN *   *"
PU 63 POSITION 34,2:? "*****"
CC 64 GOSUB RESET
OL 110 GOSUB LOOKUP
RO 115 IF SEC>T THEN ? "SORRY THERE IS NO
    MORE TIME":GOTO 137
MQ 120 GOSUB INKEY
RT 125 IF IN=0 THEN 110
TO 130 IF IN=Y THEN ? "WELL DONE THAT IS
   CORRECT":GOTO 140
FB 135 ? "SORRY - THAT ANSWER WAS NOT COR
   RECT"
OI 137 ? "THE RIGHT ANSWER WAS NUMBER ";Y
YA 140 ? "PRESS ANY KEY FOR THE NEXT QUES
   TION":GOTO 40
WG 499 REM *** RESET TIMERS
YB 500 POKE 20,0:POKE 19,0:POKE 18,0:RETU
   RN
GW 550 GOSUB 700:GOSUB 800:GOTO 550
XV 599 REM *** LOOKUP TIME
MN 600 JIF=PEEK(18)*65536+PEEK(19)*256+PE
   EK(20)
LF 610 SEC=INT(0.5+(JIF/50))
CD 620 IF SEC<>SECOLD THEN POSITION 35,1:
   ? "   ":POSITION 36,1:? (T-SEC):POSITI
   ON 2,17:SECOLD=SEC
ZI 630 RETURN
LL 699 REM *** GET A KEYPRESS
IF 700 OPEN #1,4,0,"K:":GET #1,K:CLOSE #1
   :RETURN
FG 799 REM *** KEYBOARD NUMBER INPUT
SW 800 KEYP=PEEK(764):IF KEYP=255 THEN IN
   =0:RETURN
TC 801 IF KEYP=31 THEN IN=1
TP 802 IF KEYP=30 THEN IN=2
XJ 803 IF KEYP=26 THEN IN=3
XK 810 POKE 764,255:RETURN
CJ 999 REM **** DATA (FORMAT) ****        Q
   UESTION, CHOICE1, CHOICE2, CHOICE3, CO
   RRECT ANSWER No, TIME ALLOWED (SECS)
TE 1000 REM **********************
VE 1001 DATA HOW OLD IS PAGE 6 (NEW ATARI
    USER),10 YEARS,8 YEARS,5 YEARS,1,12
YU 1002 DATA WHAT WAS THE 1ST PAGE 6 TYPE
   -IN GAME,ASTEROIDS,PACKMAN,VULTURES,3,
   12
BY 1003 DATA WHICH IS THE BEST COMPUTER,A
   TARI,COMMODORE,OTHER,1,12
GK 2000 DATA XXX
```

THE QUIZ

I will not go through the whole program line by line as it is only designed as a vehicle for the timer demonstration, but here are a few notes for anyone who would like to take the advice Ed Hall gave in the last issue. Go ahead and change it, polish it or even mutate it to an unrecognisable perfection.

First you will find that there are only three simple questions in this quiz. It is very easy to expand the scope however as the questions and answers are all contained in data statements starting at line 1001. The data format is:

Question, Choice 1, Choice 2, Choice 3, Number of the correct answer, Number of seconds allowed for answering.

The data should be strung together separated by commas but no spaces, and you can go on adding as many as you like (within the memory of your computer). On my 800XL I estimate there is room for about 400 questions. If you want to set up sets of specialist questions you could type data files and LIST them to disk or LIST "C:" to cassette. These could then be ENTERED and used with the same fundamental quiz program (Lines 1 to 810). If you do this make certain that all your data sets have the same line numbers, then each set when loaded will completely overwrite any set used earlier. If you have a disk drive it would be quite easy to have several sets of data on one disk and add a couple of lines early in the quiz program to give a choice of quiz subjects before you start. You must leave the last line of data (2000) intact as the program recognises the XXX data as the end of the game and exits (Line 50) with a message. Otherwise you will get an error message when the program runs out of data.

Just one caution with the questions and answers, I have allowed 36 characters (including spaces) for each question and 12 for each answer. If you find this too restrictive you can

```
WO 1 REM ******************************
CR 2 REM *     TUTORIAL SUBROUTINES     *
EU 4 REM *       GET THE KEYCODE        *
XU 5 REM *            by              *
CO 6 REM *       Ian Finlayson        *
OG 7 REM *----------------------------*
EZ 8 REM * NEW ATARI USER - APR 1993  *
WW 9 REM ******************************
AY 10 REM
GQ 20 OPEN #1,4,0,"K:":GET #1,A:CLOSE #1
GO 30 ? "THE KEYCODE VALUE FOR ";CHR$(A);
   " IS ";PEEK(754)
RU 40 GOTO 20
```

change the DIM settings in line 21, but remember that the Atari screen is only 40 characters wide (38 if you do not reset the left margin) and if you go beyond this you will have to be careful that the question does not end up with a word broken between two lines.

There are several other enhancements you could make to improve the visual appeal of the game with colour and maybe using other graphic modes. You could add some sound effects and keep a score table showing how many questions were answered correctly and how long they took. I will leave it to your imagination - get your encyclopedias out!! If you create a masterpiece I would very much like to see a copy.

You can write to me Ian Finlayson at
60 Roundstone Crescent,
East Preston,
West Sussex
BN16 1DQ

ADVANCED DARTS CALCULATOR

Richard Welsh presents a simple program that proves to be surprisingly useful for those who like to throw the odd arrow or two

Hands up all you 8-bit Atari users who think you are a bit of a darts player. Keep your hands up if, like me, the biggest chore in playing the game is actually deducting the score off the total and working out whether 163 is a possible finish or not? Well if that's the case this program could be the solution to your problems. Not only does it keep track of up to a maximum of 10 players scores, but also displays possible finishes automatically (although actually getting such finishes is a totally different story!).

GET TYPING!

Type in the Basic listing and save it in the usual way. When you run the program you are presented with a title screen that vaguely resembles three darts and a prompt to press any key.

You are then required to enter the type of darts game you want. Enter "1" for the standard three legs wins a set format, or "2" to select a straight forward number of games won format. After inputting the number of players playing and their names you are then prompted to choose which player will throw first. This is achieved by pressing the SELECT key until the appropriate player is highlighted and then pressing START. If the cursor reaches the bottom of the list without a player being chosen it automatically returns to the top of the list and the process is repeated again.

TO THE OCHE!

Using the program is simply a case of throwing the darts and entering the scores until someone actually finishes. As a sideline a mini table of results is displayed at the bottom of the screen showing each players current score, their highest score of both the match and the leg, and then either the number of games won by each player or the number of sets and legs won depending upon the match format chosen at the start.

Upon finishing the player is asked to enter the number of darts used to finish. This is not the total number of darts used throughout the leg, just the number used in the last turn (i.e. 1,2 or 3). You are then presented with the main results table showing the winners results as compared with the best results obtained during the match and who achieved these feats.

Most of these statistics, like finishing score and number of darts to check out in, are fairly self explanatory, however the lowest score only registers if you have to get a score greater than 100. This is because of the fact that if someone finishes on two then this would be recorded as the lowest score even though no higher score was possible. Furthermore the "average score" refers to a players average when that person requires a score greater than 100 and is trying to score as highly as possible, whereas the "true average" reflects every score obtained, and how finishing affected this average. In my case due to bust scores and frequently having to finish on double one differences are significant between these two statistics.

HARD COPY

The results table can be printed out by pressing "P", however as the Atari 1029 cannot print control characters very easily the border to the table is transformed from these control characters to asterisks.

Alternatively pressing "I" will display each players individual results for highest and lowest scores, along with the two average score statistics for the last leg, results which can also be printed out by pressing "P".

Pressing any other key whilst on the main results table will start the next game, with the computer automatically calculating who is to throw first and prompting them to enter their score.

DARTS
CALCULATOR

```
CS 1 REM ##############################
FR 2 REM #  ADVANCED DARTS CALCUALTOR  #
QF 3 REM #      by Richard Welsh       #
SF 4 REM # --------------------------- #
QM 5 REM #  NEW ATARI USER - APR 1993  #
CX 6 REM ##############################
NM 7 REM
YN 10 DIM A$(80),B$(8),C$(11),D$(8),E$(8)
   ,F$(8),G$(8),H$(8),I$(8),J$(1),K$(10)
DW 20 DIM C(10),E(10),I(10),J(10),H(10),M
   (10),R(10),U(10),X(10),SET(10)
UG 30 GRAPHICS 8:SETCOLOR 2,0,0:COLOR 1
EC 40 POKE 16,64:POKE 53774,64:POKE 752,1
LE 50 ? "     ADVANCED DARTS CALCULATOR"
HR 60 ? :? "            BY RICHARD WELSH.";
OZ 70 GOSUB 1420
PB 90 GOSUB 2230
IY 100 GRAPHICS 0:SETCOLOR 2,0,0
NR 110 POKE 752,1:P=0:Q=0:S=99:L=0:G=180:
   T=0:V=0:GAME=0:TH=0:POKE 16,64:POKE 53
   774,64
RQ 115 REM LINE 120 USE INVERSE ESC CTRL
          TAB, INVERSE ESC SHIFT TAB AND
          ESC CTRL +
FI 120 ? "▶    ◀        ◀ ▶      ◀ ▶
          ▶ ◀←←←←"
XJ 140 GOSUB 1770
IL 150 TRAP 1100
WM 160 GOSUB 1840
RM 170 ? "↰"
RV 180 GOSUB 2100
QE 190 B=L+1
XR 200 POSITION 17,0:? A$(1+8*(B-1),8*B);
   :POSITION 10,2:? " YOUR SCORE IS ";C(B
   )
VW 210 IF C(B)<171 THEN GOSUB 2300
NZ 220 TRAP 1070:POSITION 10,4:? "WHAT DI
   D YOU SCORE ";
IC 230 IF C(B)<100 THEN POSITION 29,4:? "
   0←←";
KH 240 INPUT D
HZ 245 REM LINE 250 USE ESC CTRL 2, AND
          INVERSE CTRL DELETE BK SP
HW 250 IF D>180 OR D<0 THEN POSITION 29,4
   :? "↰<<<<<<<<<";:GOTO 240
BW 270 IF C(B)-D<0 OR C(B)-D=1 THEN ? :?
   "↰        SORRY YOU'VE BUST     ":FOR
   DEL=1 TO 500:NEXT DEL:GOTO 355
WC 280 IF Q<D THEN Q=D:F$=A$(1+8*(B-1),8*
   B)
SA 290 IF C(B)>100 THEN GOSUB 2020
WF 300 IF C(B)<100 THEN GOSUB 2070
BL 310 IF H(B)<D THEN H(B)=D
CP 320 IF I(B)<D THEN I(B)=D
NC 330 C(B)=C(B)-D
WM 340 U(B)=U(B)+D
XY 350 IF C(B)=0 THEN GOTO 420
PD 351 GOTO 360
UQ 355 IF C(B)>100 THEN X(B)=X(B)+1
LC 360 R(B)=R(B)+3
NK 370 B=B+1
RR 380 IF B>A THEN B=1
RS 390 ? "↰"
RI 400 GOSUB 2100
LV 410 GOTO 200
AA 420 POSITION 1,22:? "HOW MANY DARTS DI
   D YOU FINISH IN ";
TN 430 GOSUB 2230
EX 440 IF Z<49 OR Z>51 THEN POSITION 35,2
   2:? "↰":GOTO 420
FL 450 R(B)=R(B)+Z-48:? "↰"
HT 460 POKE 82,0
LR 470 POSITION 0,0:? " ╭──────────────
   ──────────────╮ ";
UU 480 ? "┤    WINNER OF THE GAME -
   ├";
NX 490 ? "|\──────────────────────
   ───────/|";
YV 500 ? "|/                   |      |
   \|";
AO 510 ? "||                   |WINNER|     B
   EST    ||";
VR 520 ? "||                   |      |
   ||";
QC 530 ? "|| Finishing score  |      |
   ||";
VV 540 ? "||                   |      |
   ||";
ZD 550 ? "|| Hi-score in leg  |      |
   ||";
VZ 560 ? "||                   |      |
   ||";
XK 570 ? "|| Lowest score     |      |
   ||";
WD 580 ? "||                   |      |
   ||";
IJ 590 ? "|| Average score    |      |
   ||";
VO 600 ? "||                   |      |
   ||";
GF 610 ? "|| True average     |      |
   ||";
VS 620 ? "||                   |      |
   ||";
DR 630 ? "|| Number of darts  |      |
   ||";
QE 640 ? "||  to check out    |      |
   ||";
XV 650 ? "|\                   |      |
   /|";
DC 660 ? "|/──────────────────────
   ───────\|";
SK 670 ? "||       PRESS 'P' FOR A HARD CO
   PY     ||";
FR 680 ? "┤         'I' FOR INDIVIDUAL DAT
   A      ├";
KG 690 ? " |       ANY OTHER KEY TO CONTIN
   UE     | ";
RH 700 ? " \──────────────────────
   ───────/";
TZ 710 IF P<D THEN P=D:E$=A$(1+8*(B-1),8*
   B)
IN 720 IF S>R(B) THEN S=R(B):G$=A$(1+8*(B
   -1),8*B)
CI 730 IF V<U(B)*3/R(B) THEN V=U(B)*3/R(B
   ):I$=A$(1+8*(B-1),8*B)
LX 740 IF D>100 THEN GOSUB 2070
FB 750 POSITION 26,1:? A$(1+8*(B-1),8*B)
BB 760 POSITION 21,6:? D
NS 770 POSITION 26,6:? P
GL 780 POSITION 30,6:? E$
GS 790 POSITION 21,8:? I(B)
PI 800 POSITION 26,8:? Q
IB 810 POSITION 30,8:? F$
TV 820 POSITION 21,10:? E(B)
ST 830 POSITION 26,10:? G
TF 840 POSITION 30,10:? D$
VZ 850 POSITION 21,12:? INT(M(B)/X(B)+0.5
   )
CT 860 POSITION 26,12:? INT(T+0.5)
YF 870 POSITION 30,12:? H$
TX 880 POSITION 21,14:? INT(3*U(B)/R(B)+0
   .5)
GJ 890 POSITION 26,14:? INT(V+0.5)
ZY 900 POSITION 30,14:? I$
IY 910 POSITION 21,16:? R(B)
```

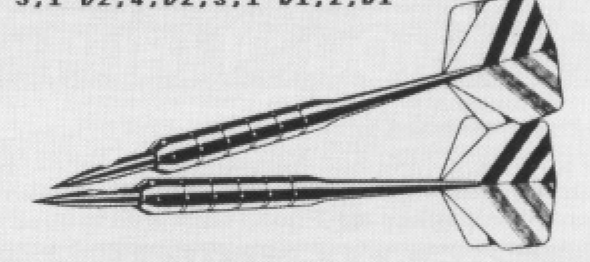
continued

DARTS
CALCULATOR

```
HA 920 POSITION 26,16:? 5
CI 930 POSITION 30,16:? G$;
TU 940 GOSUB 2230
RA 950 IF Z=73 THEN GOSUB 1270:GOTO 460
JG 960 IF Z=80 THEN GOSUB 1110:GOTO 460
SK 970 POKE 82,2:D=0
WP 980 IF GAME=2 THEN J(B)=J(B)+1
ZI 990 IF GAME=1 THEN GOSUB 2260
ET 1000 FOR F=1 TO A
NG 1010    I(F)=0:C(F)=501:R(F)=0:E(F)=180
:M(F)=0:U(F)=0:X(F)=0
DO 1020 NEXT F
MC 1030 L=L+1
SI 1040 IF L=A THEN L=0
QN 1050 GOTO 170
SN 1060 REM ERROR IN ENTERING SCORE
ZV 1070 POSITION 30,4:? "KKKKKKKK"
GB 1080 POSITION 2,6:? "PLEASE RE-ENTER Y
OUR SCORE              "
PC 1090 GOTO 220
MS 1100 ? :? "KK":? :? :? "  PLEASE RE-EN
TER VALUE":GOTO 150
SC 1110 REM PRINT OUT OF RESULTS
PC 1120 TRAP 1260
KT 1130 OPEN #1,8,0,"P:"
PA 1140 PRINT #1:PRINT #1
AZ 1150 FOR Y1=0 TO 19
PY 1160    PRINT #1;"                     ";
FD 1170    FOR X1=0 TO 39
AN 1180       LOCATE X1,Y1,CHAR
UF 1190       IF CHAR>122 OR CHAR<32 THEN C
HAR=42
XQ 1200       PRINT #1;CHR$(CHAR);
JJ 1210    NEXT X1
XA 1220    PRINT #1
IM 1230 NEXT Y1
MZ 1240 CLOSE #1
AS 1250 RETURN
GG 1260 POSITION 8,21:? "KERROR IS PRINTE
R ON LINE?  ":FOR DEL=1 TO 300:NEXT DE
L:GOTO 1240
UV 1270 REM INDIVIDUAL RESULTS TABLES
FV 1280 FOR F=1 TO A
FT 1290    POSITION 5,1:? "NAME OF PLAYER
 - ";A$(1+8*(F-1),8*F);"      "
AG 1300    POSITION 18,3:? " ":POSITION 18
,4:? "    | STATISTICS":POSITION 18
,5:? " "
EI 1310    POSITION 2,6:? "
    |                 ":POSITION 18,7:?
 " "
AC 1320    POSITION 18,8:? "        |
       ++++++++";I(F):POSITION 18,9:? "
 "
TU 1330    POSITION 18,10:? "        |
       ++++++++";E(F):POSITION 18,11:?
 " "
VB 1340    POSITION 18,12:? "        |
       ++++++++";INT(M(F)/X(F)+0.5):PO
SITION 18,13:? " "
KU 1350    POSITION 18,14:? "        |
       ++++++++";INT(3*U(F)/R(F)+0.5):
POSITION 18,15:? " "
TJ 1360    POSITION 2,16:? "
    |                 ":POSITION 2,17:
? "                  "
JF 1370    POSITION 18,18:? " ":POSITION 8
,21:? "                       "
EY 1380    GOSUB 2230:IF Z=80 THEN GOSUB 1
110:GOTO 1290
EP 1390 NEXT F
AH 1400 RETURN
CC 1410 REM TITLE PAGE
```

```
ZG 1420 FOR Q=0 TO 2
VD 1430    A=0:B=17:C=25:D=14
JF 1440    RESTORE 1540+(10*A):PLOT B,C+(Q
*50)
KR 1450    FOR X=1 TO D
NY 1460       READ E,F:DRAWTO E,F+(Q*50)
JV 1470    NEXT X
LG 1480    PLOT 24,25+(Q*50):DRAWTO 90,25+
(Q*50)
WU 1490    A=A+1:IF A=3 THEN GOSUB 1580:GO
TO 1520
EC 1500    IF A=1 THEN B=24:C=21:D=9:GOTO
1440
LD 1510    IF A=2 THEN C=29:GOTO 1440
IP 1520 NEXT Q
AS 1530 RETURN
RG 1540 DATA 21,21,123,21,144,17,207,17,2
22,19,231,23,290,25,231,27,222,31,207,
33,144,33,123,29,21,29,17,25
EC 1550 DATA 27,15,30,11,36,7,42,5,60,5,6
6,7,72,9,78,11,90,20
LU 1560 DATA 27,35,30,39,36,43,42,45,60,4
5,66,43,72,41,78,39,90,30
ON 1570 REM TEXT ON A GRAPHICS 8 SCREEN
EP 1580 X=139:Y=25+(Q*50)
WQ 1585 REM X AND Y ARE THE TEXT
         CO-ORDINATES
GI 1590 IF Q=0 THEN K$=" PRESS ANY"
QM 1600 IF Q=1 THEN K$="  KEY TO  "
KV 1610 IF Q=2 THEN K$=" CONTINUE "
JO 1620 P=PEEK(88)+256*PEEK(89):D=(X/8)+(
Y-4)*40
VC 1630 L=P+D
WV 1640 FOR CHAR=1 TO 10
YI 1650    J$=K$(CHAR,CHAR):A=ASC(J$)
QH 1660    IF A>127 THEN A=A-128
EQ 1670    IF A>31 AND A<96 THEN A=A-32:GO
TO 1690
GN 1680    IF A<32 THEN A=A+64
YD 1690    C=57344+A*8
IU 1700    FOR BYTE=0 TO 7
CO 1710       POKE L+BYTE*40,PEEK(C+BYTE)
HI 1720    NEXT BYTE
AC 1730    L=L+1
IY 1740 NEXT CHAR
BC 1750 RETURN
OQ 1760 REM TYPE OF GAME CHOSEN
MV 1770 POSITION 3,12:? "WHAT GAME FORMAT
 DO YOU WANT TO USE":POSITION 8,14:? "
(1) LEGS AND SETS"
ZA 1780 POSITION 8,16:? "(2) NUMBER OF GA
MES WON"
BA 1790 GOSUB 2230
KY 1800 IF Z<49 OR Z>50 THEN ? "KK":GOTO
1770
LN 1810 GAME=Z-48:? "K"
AV 1820 RETURN
GA 1830 REM ENTER NAMES AND WHO
         THROWS FIRST
UR 1840 POSITION 2,1:? " HOW MANY PLAYERS
 ARE THERE ":POSITION 31,1:? "1++";:IN
PUT A
MW 1850 IF A>10 THEN GOTO 1100
AG 1860 A$(1)=" ":A$(8*A)=" ":A$(2)=A$
EQ 1870 FOR B=1 TO A
LZ 1880    POSITION 28,3:? "KKKKKKKKK":POS
ITION 4,3:? "ENTER NAME OF PLAYER ";B;
" ";:INPUT B$
DV 1890    A$(1+8*(B-1),8*B)=B$:C(B)=501:H
(B)=0:I(B)=0:J(B)=0:R(B)=0:E(B)=180:M(
B)=0:U(B)=0:X(B)=0:SET(B)=0
QN 1900    POSITION 8,10+B:? A$(1+8*(B-1),
8*B)
```

```
CL 1910 NEXT B
CH 1920 POSITION 3,1:? "                                   ":IF A=1 THEN L=0:RETURN
AD 1930 POSITION 2,3:? "ENTER THE PLAYER WHO WILL THROW FIRST":? :? " PRESS SELECT TO MOVE DOWN A ROW "
XV 1940 ? :? "  AND  START TO SELECT THE PLAYER"
RF 1950 IF L=A THEN L=0:TH=0
PN 1960 FOR AA=1 TO 8:LOCATE 7+AA,11+L,BB:BB=BB+128:POSITION 7+AA,11+L:? CHR$(BB):NEXT AA
WY 1970 FOR DEL=1 TO 30:NEXT DEL
DR 1980 IF PEEK(53279)=5 THEN POSITION 8,11+L:? A$(1+8*L,8*(L+1)):L=L+1:TH=L:GOTO 1950
ZN 1990 IF PEEK(53279)=6 THEN RETURN
UT 2000 GOTO 1980
NS 2010 REM CHECK LOWEST SCORE AND WORKING FOR AVERAGE SCORE
DH 2020 IF E(B)>D THEN E(B)=D
UX 2030 IF G>E(B) THEN G=E(B):D$=A$(1+8*(B-1),8*B)
GR 2040 M(B)=M(B)+D:X(B)=X(B)+1
AP 2050 RETURN
FR 2060 REM CHECK FOR AVERAGE SCORE
BN 2070 IF T<M(B)/X(B) THEN T=M(B)/X(B):H$=A$(1+8*(B-1),8*B)
AY 2080 RETURN
AE 2090 REM SCORE TABLE
EI 2100 POSITION 2,8:? "┌─────────┬─────┬──────┬──────┬─────┐"
ED 2110 ? "|  NAME   |SCORE| HIGH | HIGH |GAMES|"
WZ 2120 IF GAME=1 THEN POSITION 32,9:? "SETS "
NG 2130 ? "|         |     | MATCH| LEG  ||"
VK 2140 IF GAME=1 THEN POSITION 32,10:? " LEGS"
YZ 2150 ? "├─────────┼─────┼──────┼──────┼─────┤"
FO 2160 FOR F=1 TO A
TB 2170    POSITION 2,11+F:? "|";A$(1+8*(F-1),8*F);"| ";C(F);"▶|  ";H(F);"▶|  ";I(F);"▶|  ";J(F);"▶|";
WH 2180    IF GAME=1 THEN ? "◀◀◀◀◀  ◀◀◀";SET(F);"▶◀◀";J(F);"▶|";
EM 2190 NEXT F
HI 2200 ? :? "└─────────┴─────┴──────┴──────┴─────┘"
AH 2210 RETURN
PH 2220 REM PRESS ANY KEY TO CONTINUE
GF 2230 POKE 764,255
UC 2235 OPEN #2,4,0,"K:":GET #2,Z:CLOSE #2
AQ 2240 RETURN
RY 2250 REM WORK OUT SETS
LE 2260 J(B)=J(B)+1
JO 2270 IF J(B)=3 THEN SET(B)=SET(B)+1:FOR F=1 TO A:J(F)=0:NEXT F:L=TH:TH=TH+1:GOSUB 2285
BC 2280 RETURN
LS 2285 IF TH=A THEN TH=0
CA 2286 RETURN
MA 2290 REM DARTS FINISHES
MC 2300 RESTORE 2410:N=1
LR 2310 IF C(B)<139 THEN RESTORE 2450
DD 2320 IF C(B)<104 THEN RESTORE 2510
NZ 2330 IF C(B)<60 THEN RESTORE 2560
UG 2340 IF C(B)<28 THEN RESTORE 2590
RM 2350 READ O,C$
EL 2360 IF C(B)=O THEN POSITION 11,6:? "FINISH :";C$:N=163
FS 2370 IF C(B)>O THEN N=163
OA 2380 N=N+1
JX 2390 IF N=164 THEN RETURN
RF 2400 GOTO 2350
DY 2410 DATA 170,T20 T20 50,167,T20 T19 50,164,T20 T18 50,161,T20 T17 50,160,T20 T20 D20,158,T20 T20 D19
VJ 2420 DATA 157,T20 T19 D20,156,T20 T20 D18,155,T20 T19 D19,154,T20 T18 D20,153,T20 T19 D18,152,T20 T20 D16
OU 2430 DATA 151,T20 T17 D17,150,T20 T18 D18,149,T20 T19 D16,148,T20 T16 D20,147,T20 T17 D18,146,T20 T18 D16
KK 2440 DATA 145,T20 T15 D20,144,T20 T20 D12,143,T20 T17 D16,142,T20 T14 D20,141,T20 T19 D12,140,T20 T20 D10
PB 2450 DATA 139,T20 T13 D20,138,T20 T18 D12,137,T19 T16 D16,136,T20 T20 D8,135,T20 T15 D15,134,T20 T14 D16
YV 2460 DATA 133,T20 T19 D8,132,T20 T16 D12,131,T20 T13 D16,130,T20 T18 D8,129,T20 T11 D18,128,T20 T20 D4
EG 2470 DATA 127,T20 T17 D8,126,T19 T11 D18,125,T20 T19 D4,124,T20 T16 D8,123,T20 T13 D12,122,T18 T18 D16
LP 2480 DATA 121,T19 T16 D8,120,T20 20 D20,119,T20 19 D20,118,T20 18 D20,117,T19 20 D20,116,T20 20 D18
LH 2490 DATA 115,T20 15 D20,114,T20 14 D20,113,T20 13 D20,112,T20 12 D20,111,T17 20 D20,110,T20 18 D16
OJ 2500 DATA 109,T20 17 D16,108,T20 16 D16,107,T19 10 D20,106,T20 14 D16,105,T20 13 D16,104,T18 18 D16
JS 2510 DATA 103,T17 20 D16,102,T20 10 D16,101,T17 20 D20,100,T20 D20,99,T19 10 D16,98,T20 D19,97,T19 D20
VH 2520 DATA 96,T20 D18,95,T19 D19,94,T18 D20,93,T19 D18,92,T20 D16,91,T17 D20,90,T18 D18,89,T19 D16,88,T16 D20
NF 2530 DATA 87,T17 D18,86,T18 D16,85,T15 D20,84,T20 D12,83,T17 D16,82,50 D16,81,T19 D12,80,T20 D10,79,T13 D20
ZW 2540 DATA 78,T18 D12,77,T15 D16,76,T20 D8,75,T13 D18,74,T14 D16,73,T19 D8,72,T16 D12,71,T13 D16,70,T10 D20
CG 2550 DATA 69,T11 D18,68,T20 D4,67,T17 D8,66,T10 D18,65,T19 D4,64,T16 D8,63,T13 D12,62,T14 D10,61,T15 D8
XE 2560 DATA 60,20 D20,59,19 D20,58,18 D20,57,17 D20,56,16 D20,55,15 D20,54,14 D20,53,13 D20,52,20 D16,51,19 D16
FZ 2570 DATA 50,18 D16,49,17 D16,48,16 D16,47,15 D16,46,14 D16,45,13 D16,44,12 D16,43,11 D16,42,10 D16,41,9 D16
ZO 2580 DATA 40,D20,39,7 D16,38,D19,37,5 D16,36,D18,35,3 D16,34,D17,33,1 D16,32,D16,31,15 D8,30,D15,29,13 D8
VT 2590 DATA 28,D14,27,11 D8,26,D13,25,9 D8,24,D12,23,7 D8,22,D11,21,5 D8,20,D10,19,3 D8,18,D9,17,1 D8,16,D8
DA 2600 DATA 15,7 D4,14,D7,13,5 D4,12,D6,11,3 D4,10,D5,9,1 D4,8,D4,7,3 D2,6,D3,5,1 D2,4,D2,3,1 D1,2,D1
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8-BIT SYSTEM: 800XL, 65XE, 1050 disk drive (needs repair), XC12 tape deck, PR Centronics interface, leads, PSUs, books, magazines, over 50 PD disks, over 50 games on tape, some on disk, Paper Clip word processor. £150. Call Scott on 081 505 9152 (London)

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XE SYSTEM: 130XE, 1050 disk drive, joystick, all boxed, in excellent condition with manuals, power supplies, cables, Miner ROM, £125. Xetec printer interface, £20. Original boxed software: Mini Office II, Rescue on Fractulas and Ballblazer, £5 each. Tel. Jim on 0652 656446 after 6 pm.

ADVENTURERS: After reading John White's series on writing adventure games, I present my first adventure "The Cave" written in Turbo Basic. If you would like a copy free of charge then please send a disk, complete with return postage to Mr. John Foskett, 26 Auckland Road, Kingston-upon-Thames, Surrey KT1 3BG

8-BIT SYSTEM: Atari 410, 1010 tape deck, Graphix AT and Microprint interfaces. Atari Artist with Touch Tablet, US Doubler with Spartados Construction Kit, books, magazines, cassettes, disks. Tel. John on 0332 361536 after 6pm.

VARIOUS HARDWARE: Okidata Microline 82A printer and Xetec interface, £50; 130XE and non working 130XE plus Happy 1050 and 1010, £150; 800XL and 1050 (hardly used) with Phonemark cassette, £110; 800XL and non working 800XL with Rambit 1010, £30. Complete Page 6 (issue 1 to 60) all bound - offers. Complete Atari User, 2 vols. bound - offers. 30+ Analogs - offers. Selection of software with each system and other software, manuals and books, joysticks, paddles and light pen. Phone Redhill, Surrey 0737 767390

XE SYSTEM: 130XE, 1050 disk drive, XC12 cassette recorder, 2 joysticks, 20 Page 6 magazines, games disks about 70, blank disks about 60, 1050 and Atari 130XE owners manual, 30 games cassettes. Will sell everything for £250. Buyer to collect. Write to Mr. G.E. Dixon, 46 Stanley Road, Scunthorpe, DN15 8AQ or phone 0724 86862

XL SYSTEM: Must sell due to unemployment. 256k XL (Rev. C), £45 inc. postage (have 4 to get rid of). Also 1 Meg plus XE, £70 inc. postage (have 2 to sell). 1010 cassette deck, £17 inc. postage. All in excellent condition. 50 cassettes (approx.), £35 inc.; 20 disk games (approx.), £30 inc. All software original. Contact Mark on 0752 344650

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MAGAZINES: American/Canadian ANALOG and ANTIC magazines for sale. ANALOG from Aug. 85 to Jan 87. ANTIC from Jan 83 to Jan 87. Offers. Please contact Vic on 0602 253644

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TWAUG: The Tyne and Wear Atari User Group bi-monthly newsletter and disk. Issue 1 now available for £1.50, Issue 2 out mid-March at £1.95. £11 for a full year's subscription. Newsletter contains articles, reviews, letters and helpful info for all 8-BIT owners. The disk is full of games, demos, utilities. Send your request to TWAUG, P.O. Box 8, Wallsend, Tyne & Wear, NE28 6DQ

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TAPE SYSTEM: Atari 65XE with XC12 datacorder plus 3 joysticks, 19 Page 6 magazines, over £150 worth of games. Offers. Call David Fare on 0492 596109

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VARIOUS: 800XL (needs transformer), 1010 disk drive plus B/W portable, £100 o.n.o. PAGE 6 Issue 7 to 60, £50; Page 6 Issue disks 28 to 60, £30. Leaderboard, Atari Smash Hits 1, Red Rat 4 star compilation, Transdisk IV, £4 each. Various other disks. Buyer collects. Ring Dublin 8484300

HARDWARE: 800XL for sale, £30; 1010 cassette recorder, £10; 2 Atari joysticks, £8 or £3 each. All with leads but all unboxed. One joystick is slightly faulty but fixable. Write to Nicky Bason, 209b, Harlesden Road, Willesden, London NW10 3SD. Buyer collects.

GAME SYSTEM: Atari XE console with keyboard and light gun, leads, power supply, instruction book with ROM cartridges Tennis, Caverns of Mars, Joust, Donkey Kong, Defender, Bug Hunt. £45. Tel. 0827 285748

XE SYSTEM: 65XE boxed with XC12 data recorder and joystick. Also 1050 disk drive, works okay but requires a power pack. Also some books/magazines and games, £80. Tel. Leeds 0532 585498

800XL DISK SYSTEM: 800XL (with upgrade and omniview 80 chip), 2 disk drives (1 Happy rev. 7), 850 interface, 120D+ Citizen printer. Complete set of Atari User, many manuals and books. £500 o.n.o. Richard Pearson, 34, Inverness Close, Coventry, CV5 7NA. Tel. 0203 407138

XE SYSTEM: 130XE, XF551 and Indus GT disk drives, Atari SMM804 printer with Graphics AT interface, various software inc. Mini Office II, MAC 65 assembler plus Mapping The Atari and Technical Reference Notes, £200 o.n.o. PAGE 6 magazines issue 1 to 450 complete, offers. Buyer collects unless local. Tel. 021 422 3052 evenings (Birmingham)

DISK BOX: Golding flip-top complete with 10 dividers and two keys. Holds up to 80 3.5" disks. Cost £9.99, will sell for £4.50 o.n.o. Write to A. Marsh, 1, Underhill Cottages, Peene, Newington, Folkestone, Kent CT18 8BE

SWAP: BBC 'B' computer and Cumana 40/80 twin disk drive, View word processor on ROM, manuals parts 1 and 2, all in perfect working order. Swap for 130XE plus 1050 disk drive or sell for £120. Tel. 0942 896538 after 6pm.

BOOKS: 35 different books for Atari 8-bit from £2 to £9 each inc. postage. Too many to list here but write with S.A.E. for list. Mr. J. Staff, 22 Gawsworth Close, Bramhall, Stockport SK7 2BB

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XE SYSTEM: 130XE, 1050 disk drive with write protect switch, games and utilities in disk box. All very good condition. £120 o.n.o. Tel. Hinckley (0455) 230696

XL SYSTEM: 800XL, 1010 tape recorder (requires power supply), all other leads, aerial, 1 joystick, 17 games on tape, couple Atari Users, £40 o.n.o.; XE SYSTEM: XC12 tape recorder, all leads, 2 joysticks. 23 games, 10 New Atari Users (issues 43 - 52), Atari Adventures book, little used and in excellent condition, £65 o.n.o. Also Atari 2600 games console very old, no aerial, no power supply. Many games hence £15 o.n.o. Contact Paul on (0407) 810184 Anglesey. After 7 pm.

VARIOUS: 65XE, 130XE, 1050 with software, XC12 (turbo) with Rambit software, 50 cassette originals, 17 ROMs. for details/offers write to Aftab Ali, 77, Grasmere Avenue, Slough, Berks. SL2 5JE. Items sold separately.

SYSTEM & SOFTWARE: 65XE upgraded to 130XE, 1050 disk drive, all leads and power packs, joystick and disks with games on, £125 plus postage. Disks - Rescue on Fractulas, Spy Hunter, Aztec, Axis Assassin, Fighter Pilot, Spy versus Spy, Tomahawk, The Goonies, Crumbles Crisis, Beer Belly Burt at £3 each plus postage. Games on tape - Darts, 180, The Pay Off, Stratosphere, Apocalypse, Elektraglide, The Goonies at £2 each plus postage. J. Simpson. 10 Ballot Hill Crescent, Bilsborrow, Nr. Preston, Lancs. PR3 0RX. Tel. 0995 40128

XE SYSTEM: 130XE with 1050 drive, 1010 tape deck, joystick etc. £120 o.n.o. Also loads of games and utilities on disk from 50p each. Send s.a.e. for list. John, Station Farm, Elmham, Dereham, NR20 5HH. Tel. 0362 668245

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SPANISH: Help is needed from an Atari samaritan. English/Spanish tutorials required on disk for either the XL/XE or ST systems. Please drop me a line if you can help. Charles Smith, 93 Preachers Lane, St. Ebbe's Oxford, OX1 1RT

TARITALK: TariTalk 8-bit to 16-bit lead wanted so I can transfer my files to an STE. Write to Chas Smith, 93 Preachers Lane, St. Ebbe's Oxford, OX1 1RT

XE WANTED: Atari 130XE, working, but power supply not essential. Martin Beswick, 115 Ingram Road, Holbeck, Leeds LS11 9RH. tel. 0532 720487

STRIP POKER: Anyone got a copy of any Strip Poker game on tape or disk for Atari XL/XE? Please help. Tel. Leeds 0532 585498

DR. LOGO: Documentation / manuals or books etc., for DR. LOGO. I believe this version of Logo came free with the ST at one stage. Tel. 0623 634811

RADIO SOFTWARE: Can anyone let me have a disk copy of the Hamtext RTTY-CW program that will save the message and holding buffers to disk. Also a copy of Microsoft Basic and the book The First Book of Machine Language by Richard Mansfield. Please ring Harry on 0787 493136

MAGAZINES: Wanted to complete collection, PAGE 6 magazines 1 to 19 inclusive, old Atari User magazines vol. 1 issues 8 to 12 inclusive. Mr. S. Berry, 17 Old Pond Road, Ashford, Kent TN23 2QX. Phone daytime 0233-610014, evenings 0233-645494. Just name your price.

SOFTWARE: Old game wanted called Great American Cross Country Road Race on disk or cassette. Also on disk or cassette Bounder by Michael A. Baxter. Call Tim on 081 778 7060 after 6pm Mon-Fri.

PENPALS/HELP

ISRAEL: 8-bit Atari programmer looking for other serious programmer to exchange info/ tips. Write to Nir Darey, P.O.B. 6002, Acco, Israel 3720

HELP: We own an 800XL and an XMM801 printer. Has anyone got a copy of Printshop and related Translator disk they are prepared to sell or swap? P. Bramley, 15 Parsloe Street, Bundaberg, Queensland, Australia 4670

HELP: Can anyone supply me with some instructions for the Wizard Adventure Creator (PAGE 6 Disk #128) as I just can't work out how to use it. If anyone can help please write to Kevin Cooke, 36 Buddle Lane, St. Thomas, Exeter, Devon

TRANSDISK: Has anyone made a list of the games that are not on the Transdisk list but can still be transferred? If you can help please write to Kevin Cooke, 36 Buddle Lane, St. Thomas, Exeter, Devon

QUICK!: Contact wanted with lucky owners of this excellent new programming language called QUICK! to swap knowledge, programs, games and anything else you can think of. Write to J. Haworth, 86 Ashtree Road, Oadby, Leics. LE2 5TD

CONTACT: All 8-bit contacts required, serious and games users. Friendly correspondent. All letters answered. Tim Mason, 34, Pemberton House, High Level Drive, London SE26 6XW

ST HELP: Help wanted to make my new 520ST work as good as my faithful 130XE. PD such as word processors, icons and such programs as AtariWriter and Print Shop. Contact W. Diggins, 15 Edinburgh Place, Armley, Leeds LS12 3RQ or phone 0532 796853

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Send your CONTACT notice to CONTACT, PAGE 6, P.O. Box 54, Stafford, ST16 1DR. Please write your notice on a separate sheet of paper, not as part of a letter.

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ISSUE 61

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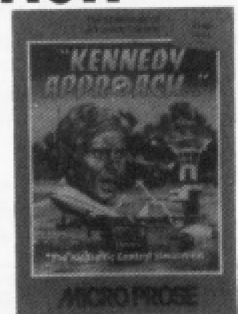
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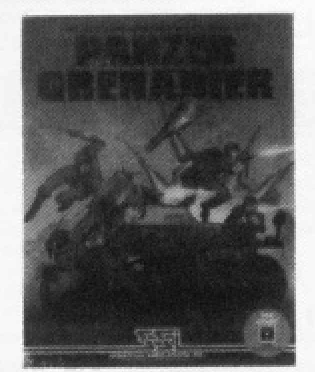
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THE PAGE 6

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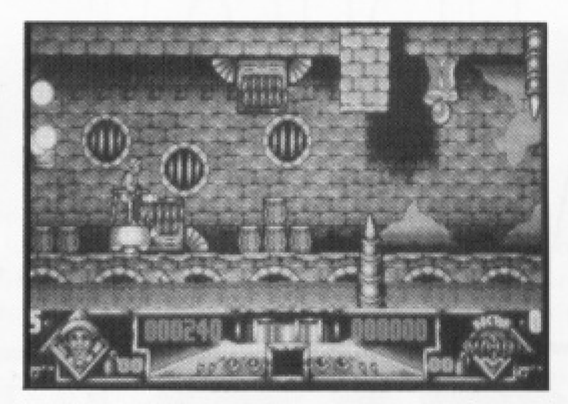
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DALEK ATTACK



A game for the ST that is being advertised on Satellite television, there's a novelty! It is quite possible that some readers may have seen this game in motion before their very eyes.

The idea behind the game is for one of three redoubtable Doctors and an equally reliable assistant to defeat the the monsters of metal. The opening sounds include quite a good rendition of the famous Saturday Afternoon (now Friday night) electronic music, together with a reasonable rendition of the Doctor's face.

Unfortunately once the option to choose your player and, if two are involved, assistant, has been taken the action begins with little warning. Graphically reminiscent of Psygnosis with fast, colourful scrolling and bold artwork the Doctor flies across the screen on a form of jet bike blowing away anything in his path. The sad thing here is that like many horizontal scrolling games there is no backtracking and no stopping. The game also runs so quickly the reaction time needed even at the easy stage is phenomenal.

Should you clear stage one, stage two appears so quickly that the player needs to avoid blinking or he will find himself exterminated.

Possibly this is just acceptable since practice does allow you to be ready in time but I must admit I only managed to see most of these screens by using the reviewer's cheat mode enclosed with the disk. Either I am aging rapidly or games like this are becoming a mite too fast for the ordinary mortal.

Surprisingly when not cheating I was quite enthralled with both the game and my own incompetence, there was a definite challenge and a genuine desire to have another go throughout the game. I was most impressed by the Psygnosis like screens and the positive control recognition. I played this before seeing the television advertisements and thought that the representations quite accurate. Three cheers for Admiral's honesty!

Although not really the Doctor's personal style - perhaps a graphic adventure would be better next time - this tries to maintain some faith with the original and the sprites are certainly recognisable. This game is a must for all fans of Doctor Who and those who like fast shoot 'em ups.

ST File

FACTS

Title: DALEK ATTACK
Publisher: Admiral Software
Price: £16.99
Reviewer: Damon Howarth

SIGHT & SOUND

Surprisingly good both in noises and pictures-

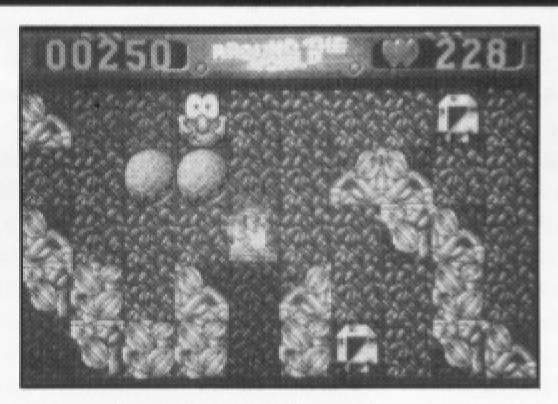
GAMEPLAY

A bit too fast and furious although practice will help a great deal-

VERDICT

Fine, probably the best of the three games I have seen this month - worth buying-

AROUND THE WORLD



FACTS

Title: AROUND THE WORLD
Publisher: Floppyshop & Pixel Shop
Price: £9.95
Reviewer: Damon Howarth

SIGHT & SOUND

Nothing excessive either way, generally quite appropriate-

GAMEPLAY

Controlling takes some getting used to, it is quite frustrating at times

VERDICT

Yes!, Well it's O.K. but ....

The independent small programmer is making a comeback to the ST! Whether this is representative of the problems surrounding the ST software market or just demonstrative of the pull that the machine has for ordinary programmers I shall leave you to decide.

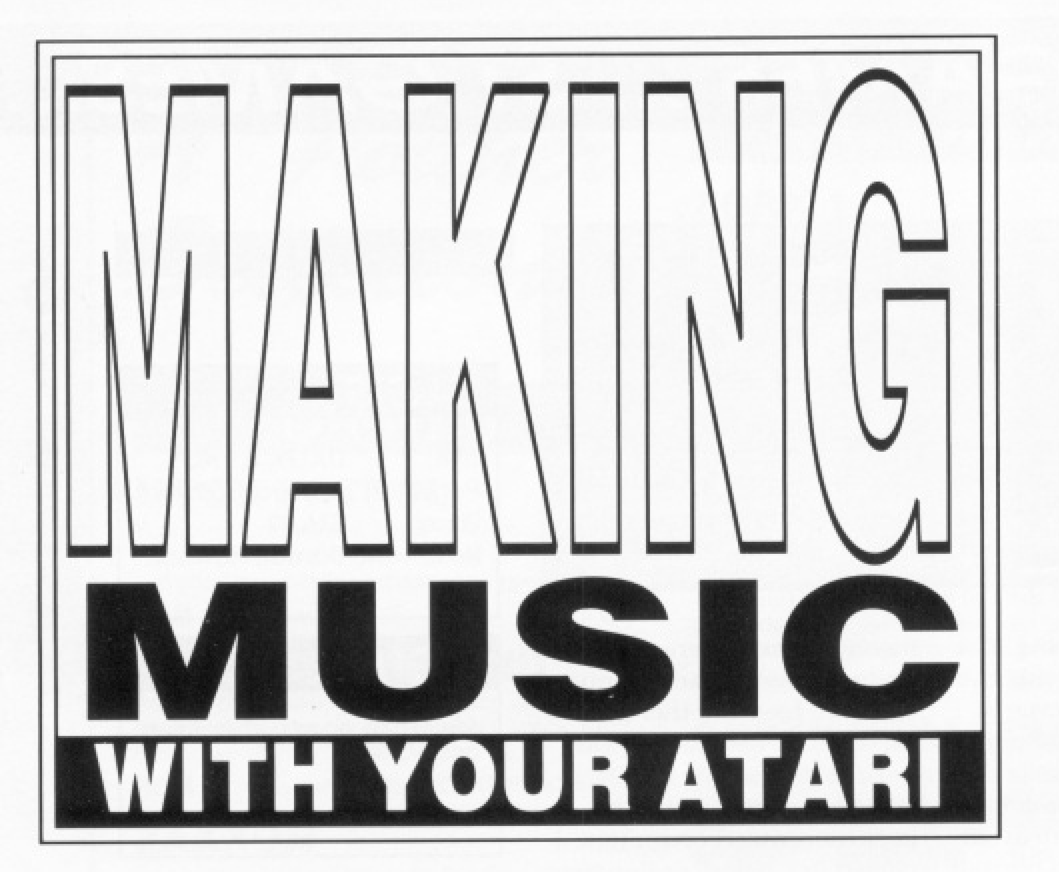
The game comes on one floppy and is a pleasantly constructed entertainment without the hype. Basically the game is a hunt the key in the screen type of affair, in many ways reminiscent of Rockford and his relations. The pictorial content is a 3D perspective that feels like the older Ultimate games or even Batman.
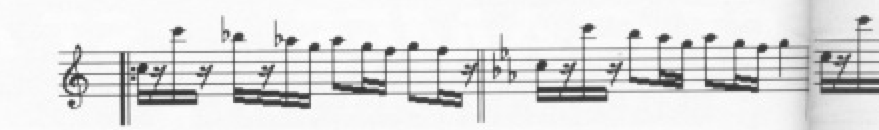
I was pleasantly surprised by this game in so much as it had a most acceptable soundtrack and a fairly friendly, if not confusing, control system. The joystick needs some wielding to obtain the desired results but the sprites are large enough to make this an entertaining romp.

Owing to the nature of the big friendly looking sprites, even the bad guys look cute and this is helpful because they tend to spoil your day on a regular basis. The game boasts lots of special devices to propel you about the screen which include teleporters and switches to operate various pieces of machinery.

The game played in a friendly but somewhat difficult manner and there were times I wondered why I was quite as fascinated with it as I was. There seemed to be an inbuilt bias towards frustrating the player that could leave you on the brink of throwing the whole thing away, but then a slight glimmer would appear and the whole thing became far more entertaining.

I find it hard to be objective about this game, it looks and feels like a game from the earlier days of the ST. Indeed it almost felt like an 8-bit game but every so often it delivered a nudge to the mental faculties that made the style seem irrelevant. This is a lowish priced mail order game and in many respects the purchaser is not going to be disappointed with it. Sadly you can't try before buying. On balance the producers have tried hard and achieved a marketable game. Maybe it will grow on me after repeated plays though I'm not quite sure.





CD quality sampling with Replay 16

John S Davison's regular guide to ST music making

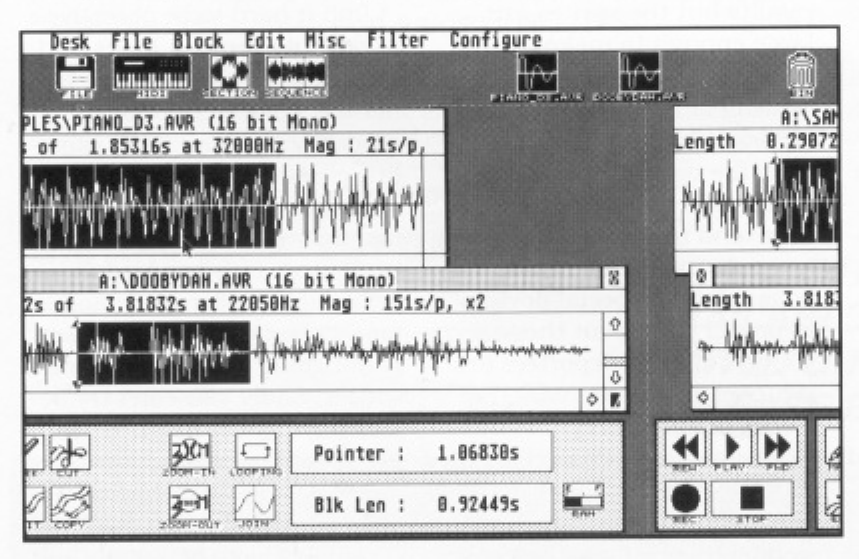
I just knew they'd get there in the end. Yes folks, Audio Visual Research (AVR) the undisputed masters of digital sound sampling on the ST have finally produced a full 16-bit version of their famous Replay sampler. It's called Replay 16 and is now available via Microdeal for just £129.95.

If you read my "Sample This!" series (in issues 50 to 54) you'll already know about AVR and their sampling products. These have ranged from the simple, inexpensive Mastersound II, through various flavours of the basic Replay cartridge, Stereo Replay for stereo sampling, to the excellent Replay Professional. They all suffer from one basic limitation though - they're based on 8-bit sampling resolution which compromises their sonic performance. Despite its name even Replay Professional can't compete with true professional samplers, which are capable of delivering CD sound quality. That is achieved through 16-bit resolution and a 44KHz sampling rate - and Replay 16 now has these!

The package includes a large L-shaped cartridge; four double sided disks containing the software; and a comprehensive instruction manual, ring bound for convenience. The cartridge has two phono sockets, one each for input and output of mono audio signals. There's also a small rotary control used for setting input signal sensitivity. The software runs in medium or high resolution on any ST(E) or TT with a double sided disk drive. However, 1MB is a practical minimum memory size, and to fully exploit it you really need more - much more!

Installation is easy - just slide the cartridge into the ST's cartridge port, boot up the sample editing program, and you can start experimenting with the ready-made samples provided. The editor will play samples through the TV/monitor speaker, but far better results are obtained by connecting the cartridge's OUT socket to an external amplifier and speakers. To record your own samples you also need to connect a signal source to the cartridge's IN socket, and for both functions you need to supply your own connecting cables. Most people use their hi-fi as a signal source and amplification, so a couple of ordinary phono-to-phono hi-fi leads will probably suffice.

As with Stereo Replay the software for Replay 16 was developed from that used in AVR's expensive Pro-Series sampler packages. In fact I suspect it's actually recycled Stereo Replay software, as it does include stereo functions even though the hardware is mono only. Perhaps there's a Stereo Replay 16 cartridge to follow?
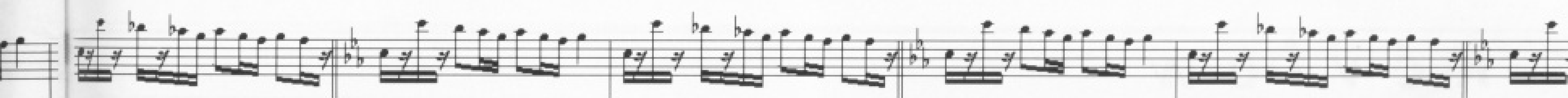


Replay's main editing screen

REPLAY DESKTOP

The software contains too many features to cover in full here, so I'll describe just the main ones. Despite its complexity AVR have managed to make the programs easy to use, mainly by exploiting a graphical user interface based on the "Replay Desktop".

The heart of Replay 16 is its sample editor, used for recording new samples, editing and processing them in various ways, and saving them on disk for later use with the MIDIPlay and Drumbeat programs provided. The editor boots up into the Replay Desktop onto which you can open windows for various functions. Like the GEM desktop this has a menu bar across the top providing access to virtually all the editor's facilities. For ease of use many of these are also available via mouse selectable icons on the desktop or directly from the ST's keyboard.

The area below the menu is divided into three areas, these being the "transport" controls, the block control panel; and the main desktop area. The mouse operated transport controls work like a tape recorder's, providing a convenient means of



recording and playing samples, and "fast-forwarding" or "rewinding" them.

The main desktop area initially displays icons used for loading, saving, and deleting samples; for accessing MIDI keyboard facilities; and for invoking the sample sequencing features. After loading samples they appear on the desktop as named icons. By clicking on one you open a resizable, movable, zoomable editing window in which its waveform is displayed. You can continue loading samples into memory until it's full, and up to seven of them can be displayed simultaneously, each in its own window. Replay 16 can handle samples in AVR, 8SVX-IFF, and AIFF formats, and other formats can be read but may require further adjustment before use.

All or part of a sample (known as a "block") can be manipulated in its window using the editing tools provided. After defining a block to the editor additional icons appear in the block control panel. These invoke the more common block editing actions such as cutting, pasting, and copying blocks within a sample, or even from one sample window to another if you want to build composite samples from several different ones. You can also change the volume level of a sample; reverse it to play backwards; fade it in/out; repeat it to fill a given space; and superimpose samples. Special tools are provided for locating optimum sample looping points (for lengthening playback duration without taking up extra memory), and even for disguising those annoying audible glitches which often occur at loop joins.

FILTERS AND EFFECTS

The editor includes various sound processing facilities in addition to the physical editing functions. You can digitally filter the sound with adjustable low pass, high pass, band pass, and notch filters, perform bass and treble enhancement and spot frequency boosting, and remove DC bias. There's also a Fast Fourier Transform function to help you analyse a sample's frequency content before deciding which filters to use. The usual Replay special effects are included too, allowing you to add a degree of reverb, echo, and flange effects to the basic sample.

Replay 16 supports the MIDI Sample Dump standard. This was originally designed to allow interchange of samples between dedicated samplers, but its use is open to interpretation and resultant differences in implementation by instrument manufacturers have rendered it less useful than intended. It can also be used to upload/download samples between computer and sampler for storage and editing purposes. Editing samples on a computer screen is much easier than trying to do it on a dedicated sampler's tiny LCD panel, hence MIDI Sample Dump's inclusion in Replay 16. AVR claim it works OK with Akai's popular S1000 and S950 samplers, but you could have trouble if using other models.

Another new feature is sample sequencing. This allows you to load several different samples into memory, subdivide each into named "sections", then trigger their playback in any order from a "cue list", which can be built up using the sequencer's editor. It works, but facilities are fairly limited at present. AVR say they'll develop them further if there's a demand. According to the manual the sequencer is also meant to have a "sync" facility for driving external MIDI devices, but this hasn't actually been implemented yet.

MORE DRUMS

AVR have always included a drum machine program with their samplers, and the version included here is called Drumbeat 16. Its drum kit now holds up to 30 different samples, any four of which can be played simultaneously. Drum sequences are built using the usual grid editor and pattern/song structure, and the program can hold up to 10 songs of up to 100 pattern entries each, selected from 50 different patterns.

On the MIDI side, Drumbeat can sync to an external MIDI clock (e.g. from an external sequencer) or can act as the master clock which external sequencers can follow. It can also transmit a MIDI Note On message to trigger an external synth sound whenever a sample is played. You can even attach up to six MIDI drum pads and trigger the samples from these.

I was pleased to find AVR have included Replay Professional's MIDIPlay keyboard emulator in this package. This allows you to play samples held in the ST's memory directly from a MIDI keyboard or external MIDI sequencer. You can load up to 128 samples into it and map each one to a single key or group of keys on a MIDI keyboard, from where they can be played. Four different keyboard maps may be used and you can switch between them as required. As with Drumbeat, up to four notes/samples can be played simultaneously.

QUALITY SOUND

I must say I was impressed with Replay 16's sound quality. Its 16-bit resolution and sampling rates of up to 50KHz do make a difference, as demonstrated by the ready-made samples provided. One particularly good one is of a female scat singer. Her delivery of that immortal line "doo-dow-n-doo-dop-bop-dah-dum-bow-uh-wow-ow ...." is so startlingly realistic I couldn't leave it alone. I kept playing it loudly until my wife threatened to do something distinctly unmusical with the cartridge! The Drumbeat demo song is excellent too, producing impressively solid rhythm sounds from the samples provided.

Home made samples can also sound just as good. I tried sampling sounds from a Yamaha PSS-790 synth and then compared them by alternately playing the sample and the original synth sound. They were very close in quality, with perhaps just a touch more background noise in the sample. My son Pete then decided he'd like to try out Replay 16 and (as 11 year olds will) tried sampling various sounds of flatulence. He added some reverb, reversed the sample, and played the resultant sound back at thunderous volume via the hi-fi. Serious stuff, this sampling! It's a good thing his Mum was out at the time - if the scat singer upset her just think what this could have done!

Compared with previous AVR offerings Replay 16 sounds cleaner, smoother, and generally suffers from less background noise and distortion. This assumes you take care recording the samples, of course. It's still possible to produce awful results if you don't use high quality signals input at the optimum level. Overall though, it's the best sounding sampler I've ever used on the ST, and in spite of its inevitable compromises it's still very usable, musically speaking. If you want 16-bit sampling but can't afford a dedicated professional level instrument from Akai or Roland then make sure you audition Replay 16.

VIDEO MASTER

A new craze is sweeping the IBM PC world. This is the "multimedia" phenomenon - advanced sound and graphics integrated into computer applications. So what's new about this? Well, it includes the use of live-motion video clips and high quality sampled stereo sounds in addition to the usual computer generated varieties. Sound can also be generated from external sound synthesisers via MIDI (one reason why General MIDI came into being), or from specialised add-on sound boards. Multimedia features can be incorporated into many types of application, but it's particularly attractive for those of an interactive nature, for instance educational programs, games, and simulations, or for producing audio/visual presentations.

You can now buy "multimedia PCs" ready configured for multimedia use, which include a powerful processor, large memory, hard disk, high resolution colour graphics, a good quality sound board, and a CD-ROM drive. The last named is required as true multimedia applications often have enormous disk storage requirements, and the CD-ROM's 600MB capacity is ideal for the job.

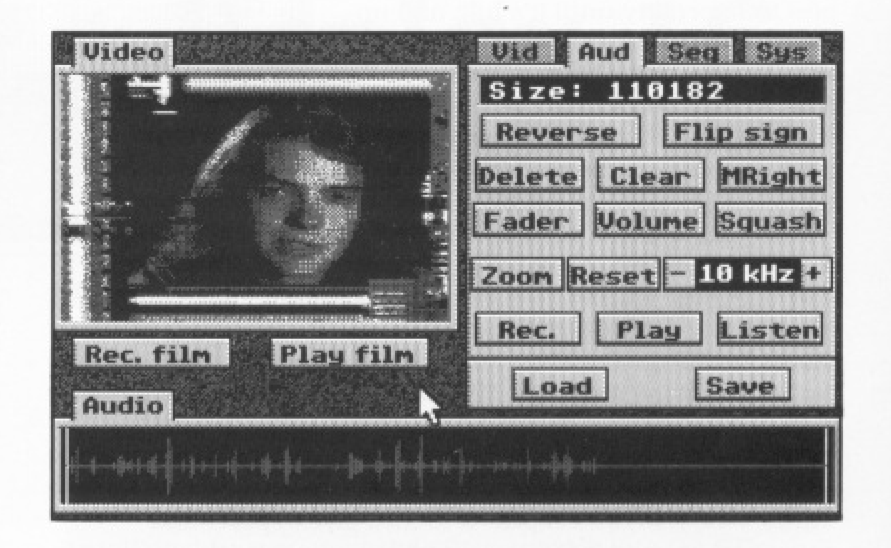
Authoring your own multimedia presentations requires even more hardware and software, as you need to add the means of sampling the sound and video material required, editing them, and building them into finished multimedia products. Generally the kit to do this is very expensive.

MULTIMEDIA ON ATARI?

Why am I telling you all this? Well, it's just to put this latest product from Microdeal into context with the mainstream computer world. Video Master is an attempt to put a low cost multimedia playback AND authoring capability into the hands of Atari users - it's a video digitiser and sound sampler combined in one unit, complete with software for producing your own multimedia presentations. Like Microdeal's sound sampling products it was developed by Audio Visual Research (AVR).

To run it you'll need a minimum of an ST(E) or Falcon with 1MB memory, a double sided floppy disk drive, and a colour TV/monitor. Larger memory and a hard disk are recommended, but not mandatory. You'll also need a source of video and audio signals - video can be captured from the VIDEO (not RF) output of a domestic video recorder, camcorder, or video camera, while audio can come from the separate AUDIO output from the same sources or from a hi-fi, Walkman, or similar.

The Video Master package contains a double sided disk holding the software; a tri-colour filter set (red, green, and blue filters for use with video cameras); a large "L-shaped" cartridge containing the sound and video digitising hardware; and an instruction manual. The program disk includes both ST and Falcon versions of the code, making this one of the first programs released to exploit the Falcon's new graphics capabilities. No connecting leads are included, as these depend on the ancillary video and audio equipment you intend using. Two



phono-to-phono leads are often all that's required though.

After connecting up you may need to adjust two controls on the cartridge - these set contrast and black levels to suit your video equipment. The tiny knobs are very fiddly to turn with your fingers, but the ends are slotted to take a screwdriver blade, which makes the job much easier.

VIDEO CLIPS

So, what can you do with Video Master? Firstly, it can record video clips at up to 25 frames per second, the standard rate for recording live-motion video (or 30fps for overseas use). You can also choose from several slower frame rates, and there's even a time-lapse facility for capturing single frames at any desired interval (hours apart if required!). Using this with a video camera you can speed up action that's normally too slow to see, e.g. a flower bud opening. There are some restrictions though. Despite colour signal input, Video Master only records in monochrome. Also, the captured clips fill only one quarter of your monitor screen.

Secondly, Video Master can produce 16-level greyscale still pictures from a video source having a good still-frame capability. Or, if you have an electronic colour splitter box (not supplied) you can produce still-frame pictures in colour. Alternatively, camcorder or colour video camera owners can produce colour still-frames by taking three separate "snapshots" of a subject through the tri-colour filter set provided, and then use the program's "colour merge" facility to produce a colour picture. The ST version of the program handles colour pictures either in 16 colour Degas format or 512 colour Spectrum-512 format. IFF format is also handled. On the Falcon this becomes 16-level greyscale in 320x200, 16 colours in normal low-res mode, or up to 4096 colours in TrueColour mode. Unlike motion video clips the still-frame pictures may be full screen size if required.

I used Video Master with a 1MB STE and first tried recording from an old Toshiba Beta video recorder. This worked fine for motion video, but wasn't very good on still-frame as the Toshi-

ba's pause mode wasn't really up to it. Both aspects were fine when using a newer Panasonic VHS machine though. I didn't have access to a camcorder or video splitter so couldn't try out the colour still-frame facilities.

Video clips can be edited to remove unwanted sections or individual video frames, and you can also insert blank frames or frames "grabbed" from an external video source. A clip can also be reversed, so the action runs backwards! You can even import pictures produced by other means (e.g. a paint program) from disk and insert them into an existing clip.

SOUND SAMPLES

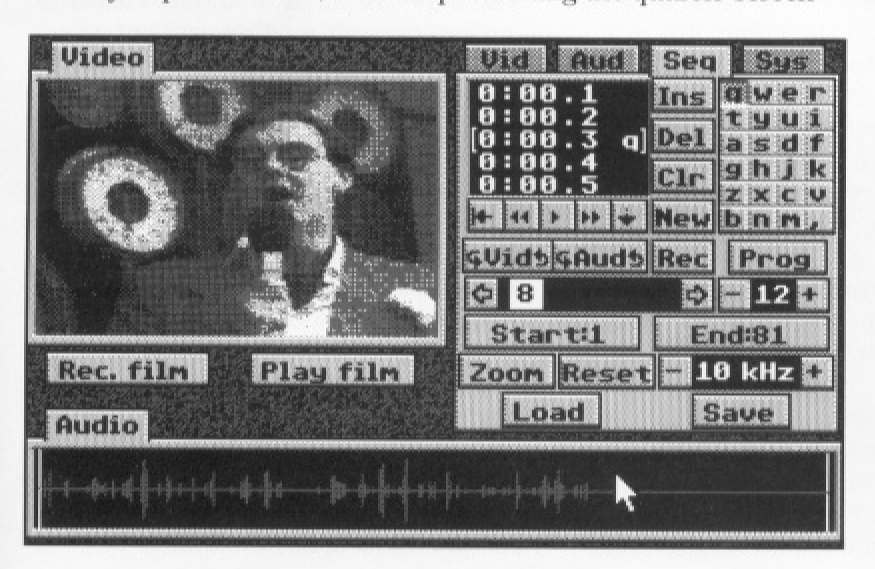
Video Master also records monophonic digitised sound at sampling rates up to 15KHz. It can do this simultaneously with video clip recording, so you capture the video AND its associated sound in one pass. Or, you can record video and sound separately (from completely different sources if required) and play them back together. You can even add sounds recorded with a separate sound sampler to your video clips. A looping point may be set both for the video and audio, so the clip and its sound will play back repeatedly until stopped.

The sound software includes facilities found in AVR's Replay sound sampling packages. These allow you to set the sampling rate; display the sample waveform onscreen; cut sections from it; fade it in/out; reverse it; and increase or decrease its volume by chosen amounts. You can also load and save samples independently of video clips for greater flexibility.

After editing you can assign a clip (or even a still frame) and its sound to a key on the ST's keyboard and trigger it by pressing that key. You can load several such clips and frames into memory simultaneously, assign them to different keys, and play them in any order simply by pressing the appropriate keys.

The next stage is to automate the key depressions via Video Master's video sequencer, allowing you to seamlessly join a series of different clips to form short "films" complete with audio soundtrack. However, all clips used have to be in memory simultaneously, so to do anything worthwhile you really need large amounts of memory and a hard disk to store everything on.

A completed "film" can be distributed to your friends on floppy disk (assuming it will fit!) using VidiPlay, the auto-booting player program provided. This also allows some flexibility in presentation, such as positioning the quarter screen motion video where you want on the screen, and providing a still-frame background picture (to help disguise the fact that the video picture is so small). The demo file supplied with VidiPlay gives a good idea of what's possible.



EASE OF USE?

Video Master is fairly easy to use once you know what you're doing. Its user interface isn't exactly intuitive, although AVR have tried hard to make it friendly by representing the program's major functions as four "cards", each accessed by clicking on its "index tab". The hardest bit to assimilate was the video sequencer, and I experienced some trouble with this. It didn't always work as expected, particularly when saving sequences, and I still haven't fathomed out whether these quirks are really bugs or something I've misunderstood.

Talking of bugs, Video Master contains a real beauty. If you try to save a still-frame out to disk the program actually saves an image of the file selector screen instead! AVR have come clean and warn about this in a README file on disk, and also explain a very messy circumvention procedure. They really should have fixed this problem before releasing the program.

One annoying "feature" is that when setting up to record you can only monitor incoming video OR sound via the computer's monitor screen - not both together. I found this so irritating I eventually connected a separate TV to the video recorder's RF output just for setup monitoring purposes.

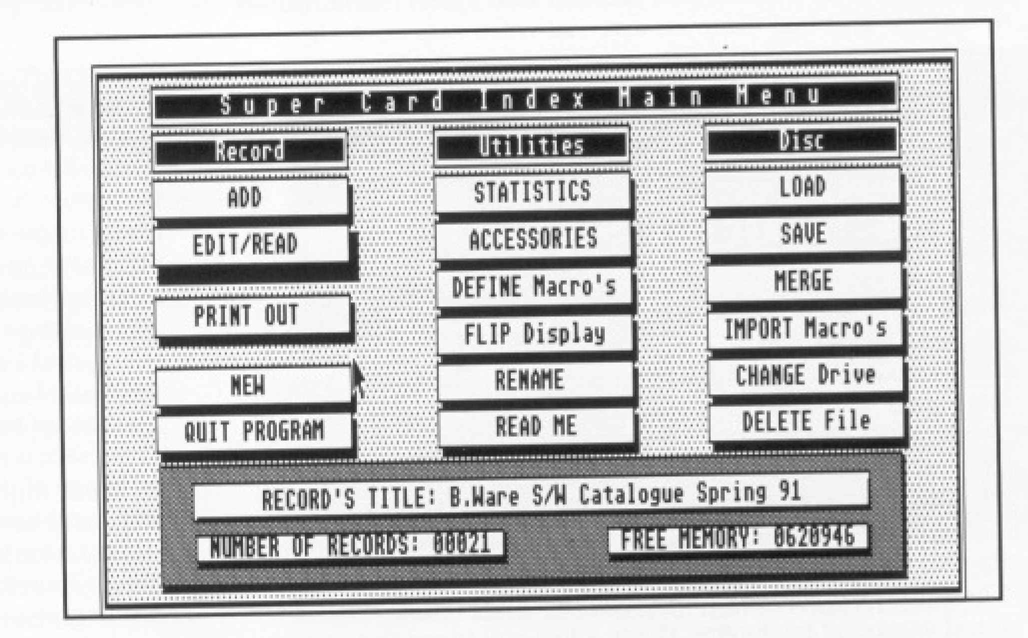
Another problem I had was running out of memory, but this wasn't Video Master's fault. Multimedia gobbles memory and 1MB just isn't adequate for doing anything really serious. OK, it's enough to play around with, and for doing simple video picture grabs for importing into paint and desk top publishing programs - but not if you want to use live-action video clips. After loading the program there's room for just 98 frames of video - that's under 4 seconds running time at 25 fps. Recording sound as well reduces this even further. There are ways of economising on memory, such as using slower frame rates, looping frame groups so they repeat play, or even using still-frames. With a little ingenuity you can probably make quite substantial multimedia presentations, but 1MB still cramps your style. 2MB is far better, with more if possible.

In summary, Video Master delivers a lot for its asking price and generally works surprisingly well. I wouldn't describe it as the "ultimate multimedia system..." as stated on the packaging, as it doesn't begin to compete with what's available in the PC world, but then at this price level you wouldn't expect it. Also, from the number of little quirks (bugs?) the software exhibits I get the feeling it's been rushed onto the market and would have benefited from a little more testing and development work. Nevertheless, despite its limitations I'm sure many people will find serious uses for it - even if it's just as a simple video frame grabber and sound sampler rather than as a proper multimedia authoring toolkit.

Product:	**VIDEO MASTER**
Producer:	**Microdeal/AVR**
Price:	**£69.95**
Reviewer:	**John S Davison**

Paul Rixon's PD WORLD

After word processing, the most popular of personal computer applications has to be the database. Computers are, after all, intrinsically designed to save, store, recall and calculate large quantities of information. Whether it's customer details, phone numbers or cooking recipes a computer can carry out filing tasks more quickly and accurately than any paper-based system. However, the ST has never been well supported by commercial database publishers - the absence of a common format, such as the XBase standard in the PC world, has not improved the situation. Meanwhile, public domain authors have helped to fill the gap with some very professional software ...



A COMPETENT START

For relatively small applications, **FIRST BASE** is a competent solution. It's a memory resident system which means that all the data entered is initially held in the memory of your ST. The more memory you have, the more records can be stored. It will work with 512K machines though a megabyte will be needed for anything other than small quantities of data. Because manipulation of the database doesn't require disk access, First Base performs common tasks very quickly indeed. It's also very easy to use. Most program options can be selected either with the function keys or by clicking on pull-down menu options. You can step through the records in sequence or search for those containing a specified string. You can also sort records into ascending or descending order.

The database is stored on disk as three separate files. One of these contains the data for all records in ASCII format, so you could load it into a word processor. Each database record can contain up to a thousand characters which in turn may comprise up to eleven fields. This is rather restrictive by commercial standards but possible applications include lists of addresses, video tapes, compact discs or computer game collections. In the latter case you can make use of the 'Catfile' utility supplied which reads disk directories into First Base format. Catfile asks you to specify the required file extensions and then searches your disk for matching files. It creates a database with file names, sizes and sufficient space for you to add a description of the content. There is plenty of documentation on this disk, though it's unlikely you'll need to read it!

THE ULTIMATE CARD INDEX

When B.Ware's commercial Super Card Index was reviewed in NAU issue 44 it received some very favourable comments. B.Ware later released an updated version and have now made the original **SUPER CARD 1.3** available as shareware. If you find it useful you are asked to submit the modest sum of £5 (it originally cost five times this much) and in return you'll receive a manual and a discount on the upgrade.

Super Card is known as one of the easiest to use databases for the ST. It's based on a card index principal and is similar to First Base in that all the data is held and sorted in memory, until you decide to save it onto disk. An unusual feature of Super Card is that it doesn't bother with field lengths, data types and suchlike. Each record is 'free format' so you can type in whatever you like, up to 16000 lines of 32000 characters per record. Assuming sufficient memory you could have up to 32767 records - more than enough for most purposes. You can locate individual records manually or by specifying search 'filters'. A filter consists of a character string that can be used with AND or NOT operators to search for records containing, or not containing, particular words or phrases. Once the matches have been displayed you can skip back and forth through the cards and copy, delete, edit, add to or print each one.

The report facilities are limited (since you can't specify field names) but you can modify the margins, spacing and the subset of lines to be output. B.Ware claim to have successfully used Super Card for their own customer records, so users should have no problems adopting it for their own applications.

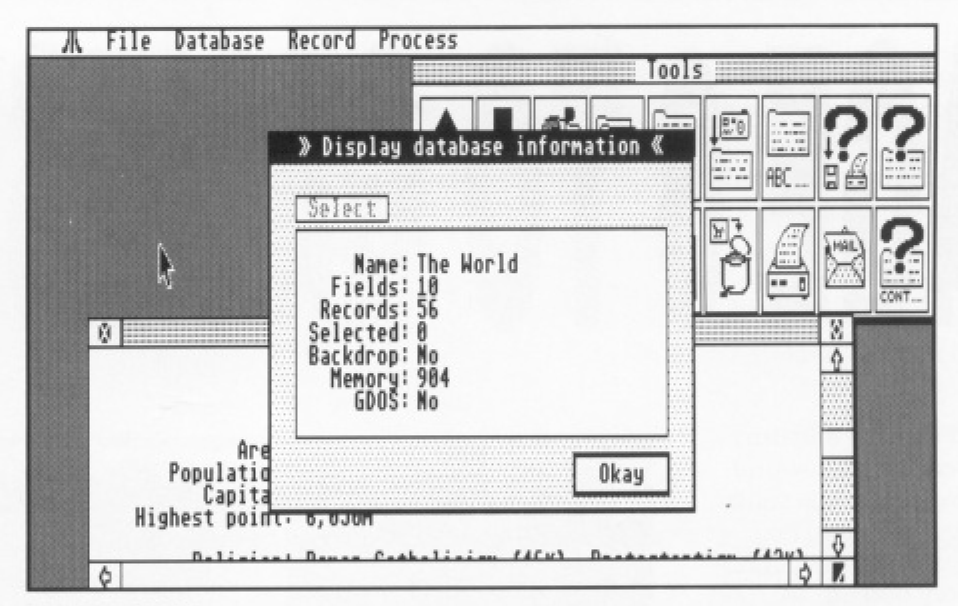
In addition to Super Card 1.3 the disk contains demo versions of several other B.Ware products - Super Card 2, Master Time, B.Spell, School Time Maths and Play Spell. They're supplied in compacted form and you are prompted through the process of inserting disks to expand the files for use. This means there is actually several disks worth of software squeezed into the usual space available!

GETTING MORE SOPHISTICATED

If your database needs require a more sophisticated product, **FASTBASE** may be the answer. Although this is a shareware version and restricts you to a maximum of ten fields in records of up to ten thousand characters, and five simultaneous databases, these limitations are not ungenerous. For the reasonable price of twenty pounds you can send for the latest version which is supplied with a professionally typeset manual. Fastbase incorporates many features that are normally found only in expensive commercial offerings. These include a relational query system, password protected access and GDOS compatible output.

The first step to utilising FastBase is, of course, to create a database. To do this, you simply choose the type of the fields required and assign each with a unique name. Four field types are supported - character, numeric, date and calculated. Any of these can be designated as 'required' so that the user will be forced to enter valid data. Calculated fields may contain simple formulae, such as multiplying one field by another, or can be highly complex using functions and nested brackets. There are more than thirty built-in mathematical and financial functions. To view the database records you simply open up a window, which can then be moved and resized freely in the usual manner. The record layout is initially rather unappealing but you can move fields around the window using the mouse to drag them into position. Each field can have its characteristics changed so that dates and numeric values are formatted in a specific way - for example, negative values can have brackets placed around them, a currency prefix can be used, decimal places can be set and zero values can be suppressed. In addition to storing textual data you can attach images to your records. The image may be a file in Degas, IMG, Neochrome or Tiny format and will be automatically sensed by the file extension. Only the file name of the image is actually stored since the image itself is loaded when required.

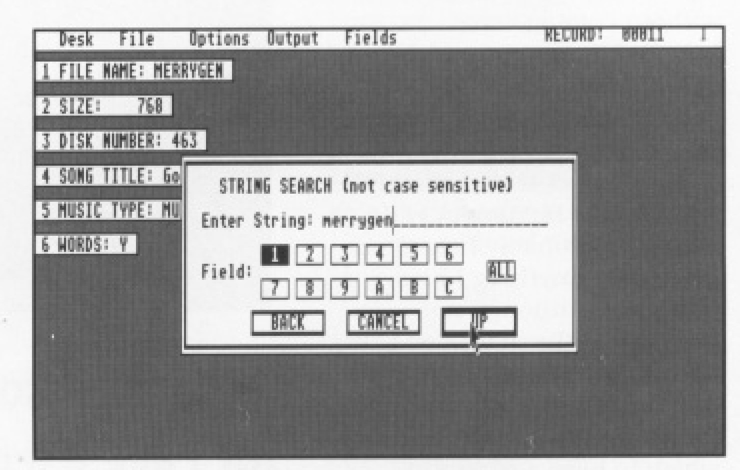
To help you deal easily with subsets of a large database, FastBase allows you to mark records for future selection in a group. These can then be extracted to disk, printed separately or have other operations performed on them. A facility is provided within the search mechanism for the automatic selection of matching records. You can also 'reverse' the selection, so that non-matching records are flagged. FastBase offers a powerful method of performing searches: the filter. This allows you to enter a formula, in much the same way as a calculated field, which is then applied to all records to determine those that produce a matching result. It will even let you refer to parallel records in another database.



FASTBASE

Queries provide the most powerful and flexible method for interrogating the database and customising the reporting of results. Each query is given a name, a filter (as described above) and a 'report string' that defines exactly what will be reported on records that satisfy the filter. The report items can be field names, quoted strings or formulae. Three buttons - screen, disk and printer - are used to specify where the report should be sent to. You can save query definitions to disk and subsequently reload up to twenty into memory. If you have already entered data into another database application and it can output using comma separated ASCII format, you can easily import this data into FastBase. Likewise, you can export data in the same comma delimited format. Another handy feature of FastBase is the 'mailshot' option. This lets you create personalised letters to friends or clients using details held in a database, by inserting special commands into your ASCII document file. An example is included to guide you through the method.

You will appreciate that Fastbase has numerous options and only a few can be described in the space available here. It's probably the most sophisticated tool you can obtain without paying for a commercial package - at least you can afford to give it a test!



FIRSTBASE for simple applications

THE WINNER!

I'm pleased to announce that the free educational gift offered in issue 59 has now been claimed! The winner is ... Mr. John Hubbock from Liverpool. Congratulations to him and loud tuts all round to everyone else who didn't bother to write! Finally, if you're wondering how you can obtain a database of more than eight hundred disks in the Page 6 ST library, the answer is to get a copy of the Page 6 Catalog Disk. Check the box below for details. See you again soon!

HOW TO GET THEM

The disks featured in PD World can be obtained from the PAGE 6 ST library. When referring to a specific disk please use the unique reference code for identification. A printed catalogue describing all the library disks in detail is available from PAGE 6 at a cost of £1.95, refundable against the first few disks ordered. This includes a copy of THE PAGE 6 CATALOG DISK which is otherwise priced at £1. The disks featured this issue are:

ST557 SUPERCARD 1.3
ST609 FASTBASE
ST632 FIRST BASE AND INFODISK

Prices for standard disks are £2.95 each or £2.50 each for five or more but prices are lower for members of the PAGE 6 ST Club
Write to PAGE 6, P.O. Box 54, Stafford, ST16 1DR
Telephone 0785 213928 with credit card orders

ST File

PAGE 6 TO GAMES MASTER



John Davison jr. tells how writing for Page 6 led to television stardom

Being asked to write a feature about your career may sound very flattering, but it's actually quite a difficult thing to do. Describing your triumphs and agonies is very difficult to without coming across as being a bit pompous and aloof. What follows is a brief description of how working for this 10 year old tome has helped my career tremendously. What you're holding in your hand has probably helped me more than anything I have ever done. Although not necessarily the magazine with the largest circulation, New Atari User has acted as a more than ample platform from which to base a career in writing.

Being a reader of what was then Page 6 magazine at a very young and tender age it was 8-bit computers that were all the rage. Games consoles such as the Atari VCS and the Intellivision were decidedly passe and poo-pooed by the general public. However everything was turned on its head with the release of the Atari 520ST. Super graphics and tons of memory meant that 16-bit games were soon to be well established.

It was at this point that I decided to have a bash at the old writing lark. My Dad (yes John S. Davison and John Davison jnr are related!) had been writing articles about flight simulators for some time and I thought it looked like a pretty good way of blagging free games. After all, when you're only 14 years old, any way of getting some free software has to be a good thing.

After knocking out a review of the then "state of the art" sports game - Winter Games - I was most surprised to receive a letter which read something along the lines of "... Do you fancy doing this on a regular basis?" Obviously, I didn't have to think too hard as to my reply, and I was soon regularly receiving ST games to cast my discerning eye over.

All this went on for some quite considerable time until it got to that awfully distressing part of life - the dreaded A levels and the ensuing prospect of job hunting. Eek! As any 18 year old will withhold, the idea of actually going out and finding a job is not the most thrilling prospect. "Hard work" and "earning a living" are two expressions that will strike fear into the heart of any lazy sod who's just left school.

After bumming around through a couple of cop-out jobs during the summer (Marks and Spencer may be a superb employer but it's hardly awe inspiring), I came across a job advert at Database publications (now known as Europress and also the people who published the original Atari User Magazine) for a position on ST Action. After applying and being rejected, I soon received a phone call asking me if I'd like to be a part of their new "exciting-and-terribly-secret-so-don't-tell-anyone" project - Games-X, the UK's first weekly games multi-format magazine. Without the writing experience gained at Page 6 there would have been absolutely no way that I'd have got this job. As much as teachers and "vocational advisers" tell you, it really isn't the qualifications that get you the job you want - especially in the journalism industry. Most employers seem far more concerned with your experience than whether or not you have A-level English.

The move to Database was a major upheaval involving moving from the sunny climes of Cambridge to the dreary and decidedly wet weather of the Macclesfield area, just south of Manchester. Not only was this a job move, but also the big step away from home.

Games-X turned out to be a brief success and after nearly a year of publishing a Smash Hits style computer mag it was finally decided that the mag should be folded. In it's place came the decidedly dreadful GB Action - a dedicated Game Boy monthly magazine. At this point a number of things happened which completely changed my career. The job began to spiral downwards in terms of personal satisfaction and the prospect of redundancy seemed to loom ever near. Secondly, the publisher from Europress Interactive, Hugh Gollner, left the company and decided to form his own publishing company - Maverick Magazines.

Numerous members of the Europress Interactive staff were tempted away to the new company where two magazines were to be published - Control, a Super Nintendo specific magazine and Mega Drive Advanced Gaming, a Mega Drive magazine. By May 1992 the company was up and ready for action.

Beginning my job at the new company I soon worked my way up from staff writer to joint Deputy Editor on Mega Drive Advanced Gaming (where Hugh, the publisher and MD resided as Editor). With the Mega Drive receiving so much attention in both the specialist and general press the job has changed quite considerably from the old days at Page 6. The magazine is currently selling between 45,000 and 50,000 copies a month and has contacts around the world including America and Japan. Being an international machine there are times when it's necessary to pop over to the States to have a peep at the latest gear and the chance to go to something like the Winter CES in Las Vegas is not the sort of thing you want to miss!

Working with a machine that receives so much exposure also means that from time to time the journalists manage to grab the odd few seconds of fame. The now infamous TV programme - Games Master has turned to the video games media for it's review section and on a number of occasions I have had the privilege of being locked in a little recording studio with the likes of Dominik Diamond to record a number of games reviews.

Looking back, it seems hardly feasible that working on a very loose freelance basis for a bi-monthly Atari magazine could result in a number of television appearances in front of about 3 million people! Seems a bit scary when you think about it!

WHERE CAN I FIND ....

The Atari 8-bit computers are, without question, the finest home computers ever designed and can still hold their own against any home computer. More powerful than any 8-bit and much easier to access than any 16-bit, it is a great pity that software and hardware support is dwindling. You can still find support for your machine, though, and this directory should get you on the right track. It is by no means comprehensive and we would be happy to receive details of any other companies, anywhere in the world that still support Atari.

We cannot guarantee what response you might get if you write to any of these companies, but give it a try, they need your support as much as you need theirs. Stick a couple of International reply coupons in an envelope and, if you don't get a reply, the most you lose is a few bob. But if you do get a response, it could open up a whole new world and add years to the useful life of your Atari. Don't forget to keep us informed if you find good support for your Atari Cassic.

Software Infinity
642 East Waring Avenue
State College, PA 16801
Good PD selection. Have just begun marketing commercial games from overseas

DataQue Software
PO Box 134
Ontario, OH 44862
Turbo-816 16-bit upgrade board, TransKey hardware for using IBM keyboards on the 8-bit, and other hardware

B&C ComputerVisions
2730 Scott Boulevard
Santa Clara, CA 95050
Tel. (408) 986 9960
Huge selection of software and hardware items. Also some new commercial games, unavailable elsewhere

Sagamore Software
2104 Arapahoe Dr
Lafayette, IN 47905
Good PD/shareware selection with extensive documentation

Change In Heat
12 Bella Vista Place
Iowa City, Iowa 52245
Independent programmer has produced 2 excellent commercial quality games for the 8-bit

Bresnik Software
555 Ware Street
Mansfield, MA 02048
Another independent, producing good educational software

UltraBasic
10 East 10th Street
Bloomsburg, PA 17815
8-bit speciality software

NERDS Software
18 Wendy Drive
Farmingville, NY 11738
Printshop related software

IB Computers
9244 S.W. Beaverton-Hills Hwy
Valley Plaza Shopping Center
Beaverton, Oregon 97005
(503)297-8425

BellCom
PO Box 1043
Peterborough, Ontario, Canada K9J7A5
The largest PD/shareware selection

Compsult
PO Box 5160
San Luis Obispo, CA 93403-5160
Closeout items galore

No Frills Software
800 East 23rd Street
Kearney, NE 68847
Closeouts & Printshop graphics

Miles Better Software
219/221 Cannock Road,
Chadsmoor
Cannock, Staffordshire
WS11 2DD
England
Surely known to everybody and, apparently highly regarded in the USA

Bacmun Software
1671 East 16th Street,
Suite 629
Brooklyn, NY 11229
PD theme disks

Alpha Systems
1012 Skyland Drive
Macedonia, OH 44056
Utility software & hardware

American Technavision
15338 Inverness Street
San Leandro, CA 94579
(510) 352 5639
Large selection of commercial software at closeout prices, and hardware replacement parts

Best Electronics
2021 The Alameda, Suite 290
San Jose, CA 95126
(408) 243-6950
Known as *the* Atari hardware store. If they don't have the part you need, nobody does

BRE Software
352 West Bedford Ave,
Suite 104
Fresno, CA 93711
PD/Shareware

C&T ComputerActive
PO Box 893
Clinton, OK 73601

Phantoms Atari 8-bit
Box 331 Levisa Road
MouthCard, KY 41548

Newell Industries
P.O. Box 253
Wylit, TX 75098
Tel. (214) 442 6612

Innovative Concepts
31172 Shawn Drive
Warren, MI 48093
(313) 293-0730
Accessories, hardware, PD software

CSS
PO Box 17660
Rochester NY 14617
(716) 429 5639
Speciality hardware items, 8-bit repair service

San Jose Computers
640 Blossom Hill Road
San Jose, CA 95123
(408) 995 5080
New and reconditioned hardware and software

East Hartford Computer
202 Robert Street
East Hartford, CT 06108
Discontinued software for all computers

Aerion Software
PO Box 1222
Riverdale Station, NY, NY 10471-1222
Markets a new 8-bit commercial game

Toad Computers
556 Baltimore Annapolis Blvd
Severna Park, Maryland
21146
(301) 544-6943
Now offers a selection of software and reconditioned hardware

Gralin International
11 Shillito Road, Poole
Dorset, BH12 2BN
Hardware and software, including ICD products

TWAUG
P.O. Box 8
Wallsend
Tyne & Wear
NE28 6DQ
Regular newsletter with disk available to members and non-members

NOSAUG
S. J. Murray
71 Walker Road
Torry, Aberdeen
AB1 3DL
Scotland
Producer of the excellent disk magazine FUTURA, also available on tape

Micro Discount (Derek Fern)
265 Chester Road
Streetly, West Midlands
(021) 353 5730
Large selection of commercial software, also hardware and replacement parts

Tiger Developments
26 Menziers Avenue
Walmer, Deal
Kent
CT14 7QZ
Commercial 8-bit software

Next, is a list of magazines still supporting the 8-bit Atari.

ATARI CLASSICS
170 Sproul Road/Rt. 352
Frazer
PA 19355-1958
USA
A new bi-monthly magazine formed by a number of dedicated users to keep the 8-bit alive in the States

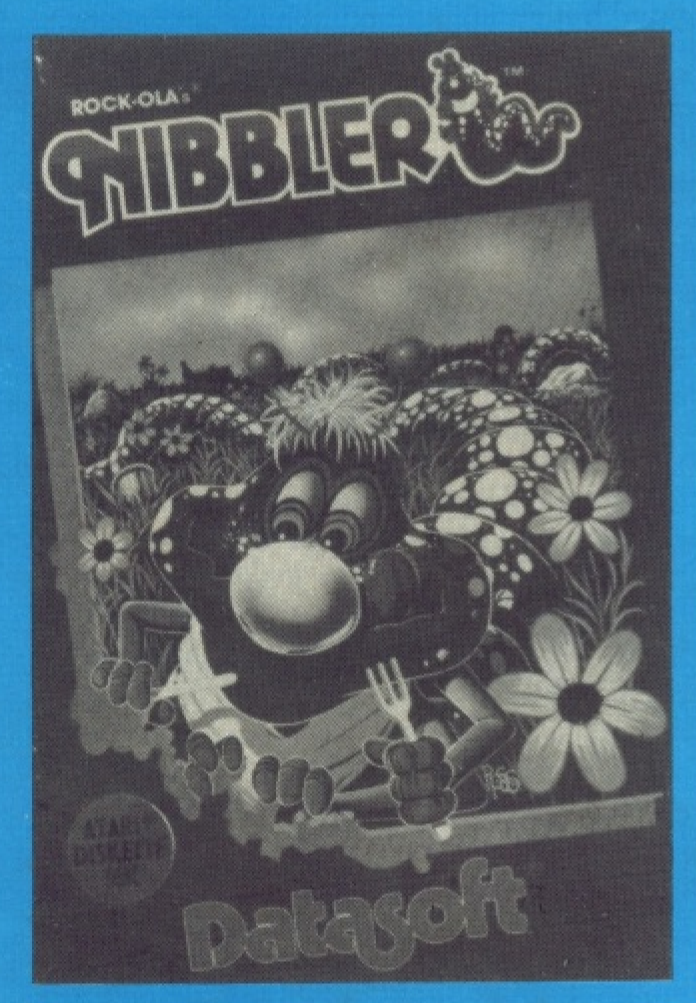
Current Notes
122 North Johnson Road
Sterling, VA 22170
A truly excellent Atari-oriented magazine, supporting both 8-bit and ST

Atari Interface
3487 Braeburn Circle
Ann Arbor, MI 48108
(313) 973-8825
A magazine supporting both 8-bit and ST, with input from Atari User Groups in the US, Canada and the UK. They also produce a monthly 8-bit disk

New Atari User (PAGE 6)
P.O. Box 54
Stafford, ST16 1DR
England
0785 213928
A professionally produced magazine supporting both 8-bit and ST, also large PD library for both machines and commercial software

EXCEL (Robert Stuart)
21 Stronsay Way
Broomlands
Irvine, Strathclyde
KA11 1HZ
Scotland
Disk based magazine and commercial software

This list was originally published by the US disk magazine AIM in July 1991 and updated by Stourbridge User Group whose address you will find included above. Many thanks to them and to all who are still supporting the 8-bit. Long may it continue!
Please keep us informed if you know of any amendments.



FREE

with orders over £10

*Yes a £9.95 Datasoft game absolutely FREE when you spend over £10 with the Accessory Shop. Check out the offers on this page and on the Accessory Shop pages inside and send or phone your order. If it comes to more than £10 (excluding postage) we'll enclose a copy of this Pacman type game absolutely FREE if you ask for it.**

**NOTE the game is on disk only and will only be sent to those who specifically request a copy with their order*

FULL DETAILS OF THE OFFERS AVAILABLE FROM THE ACCESSORY SHOP AND AN ORDER FORM ARE INCLUDED WITH EVERY ISSUE

CHECK OUT THE ACCESSORY SHOP PAGES FOR MANY MORE BARGAINS!

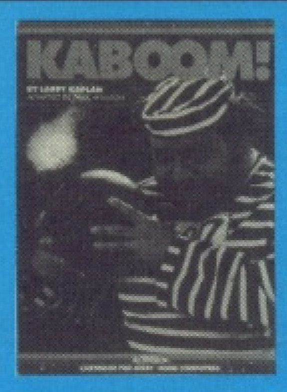


ZORK I DISK ONLY

The Infocom classic and the adventure game that changed the way all future adventures were written. The Great Underground Empire of Zork is well documented by now and thousands of players have become addicts graduating to Infocom's more difficult adventures. Zork I is the ideal introductory level adventure for beginners or those with a little experience. If you have never ventured underground before now is the time to try, it's never been cheaper to expand your universe! Classic original Infocom packaging with excellent manual and a map.

OUR SPECIAL OFFER PRICE £2.95!

LOWEST EVER PRICE ROMS!



KABOOM

Challenge the Mad Bomber as he tries to bomb you out of sight. Can you catch his bombs and dowse them in time? Or would you like to be the Mad Bomber and try to flatten one of your friends? Lots of excitement for one or two players in this addictive arcade game that won awards for Best Audio and Visual Effects when it was first released. Simple yet addictive.

ROM CARTRIDGE

OUR PRICE £2.95



RIVER RAID

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MAXWELLS DEMON

Check out the review in Issue 49. Paul Rixon found this simple game to be quite addictive and at this price can you afford not to become addicted! It's a different type of game, more in the Tetris mould than an arcade game. It sure makes you think and the price won't break you if you don't get fully hooked.

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